GRIN-Global Installation Guide

Revision Date
December 6, 2013

This guide contains an overview and step-by-step directions for installing the GRIN-Global programs, including the Curator Tool.

Comments/Suggestions:
Please contact feedback@ars-grin.gov with any suggestions or questions related to this document.

For client (user) PCs that will be connecting to a remote server, you will not need to install the server applications that are explained within these pages. Instead, load the **Updater** program and the **Curator Tool**; follow the detailed steps which begin on pages 10 (Updater) and 32 (Curator Tool).

The GRIN-Global system was designed to run primarily on a Windows operating system. (Refer to the Requirements section.)

Changes in this Document

– December 6, 2013

- Added new Updater screen images to reflect the current server address used by the Updater
- Updated wording pertaining to the Updater and Components Installation

– November 1, 2013

- Modified the directions to includes notes for the current server

– October 25, 2012

- Modified the directions for "Handling Users Who Do Not Have Windows Administrator Privileges"

– September 27, 2011

- Added directions on using Ctrl + Shift when downloading

– August 26, 2011

- Edited the text in the introduction to the Web Application
- Included section on installing the data tier on a remote server "*Installing GRIN-Global on a Non-Windows Server*"

– July 28, 2011

- Editing of references to the Search Engine (beginning with v 0.9, the Search Engine is not a separate server component)
- Clarification of a server installation vs. a basic Curator Tool installation on a user's PC
- A section was added on dealing with an organization's firewall when trying to install GRIN-Global

Table of Contents

Components of GRIN-Global

Three Different Scenarios – Deciding When to Use Updater and What Components to Install
Not all GRIN-Global users need to install all of GRIN-Global's components.

Germplasm Requestors

Users who are germplasm requestors (typically external to the organization) can access GG information from the organization's GRIN-Global (GG) Public Website. The users only need a browser –no GG software is installed. The users will access GG data, using their browser, and direct their browser to the organization's GG website URL.

Genebank Personnel

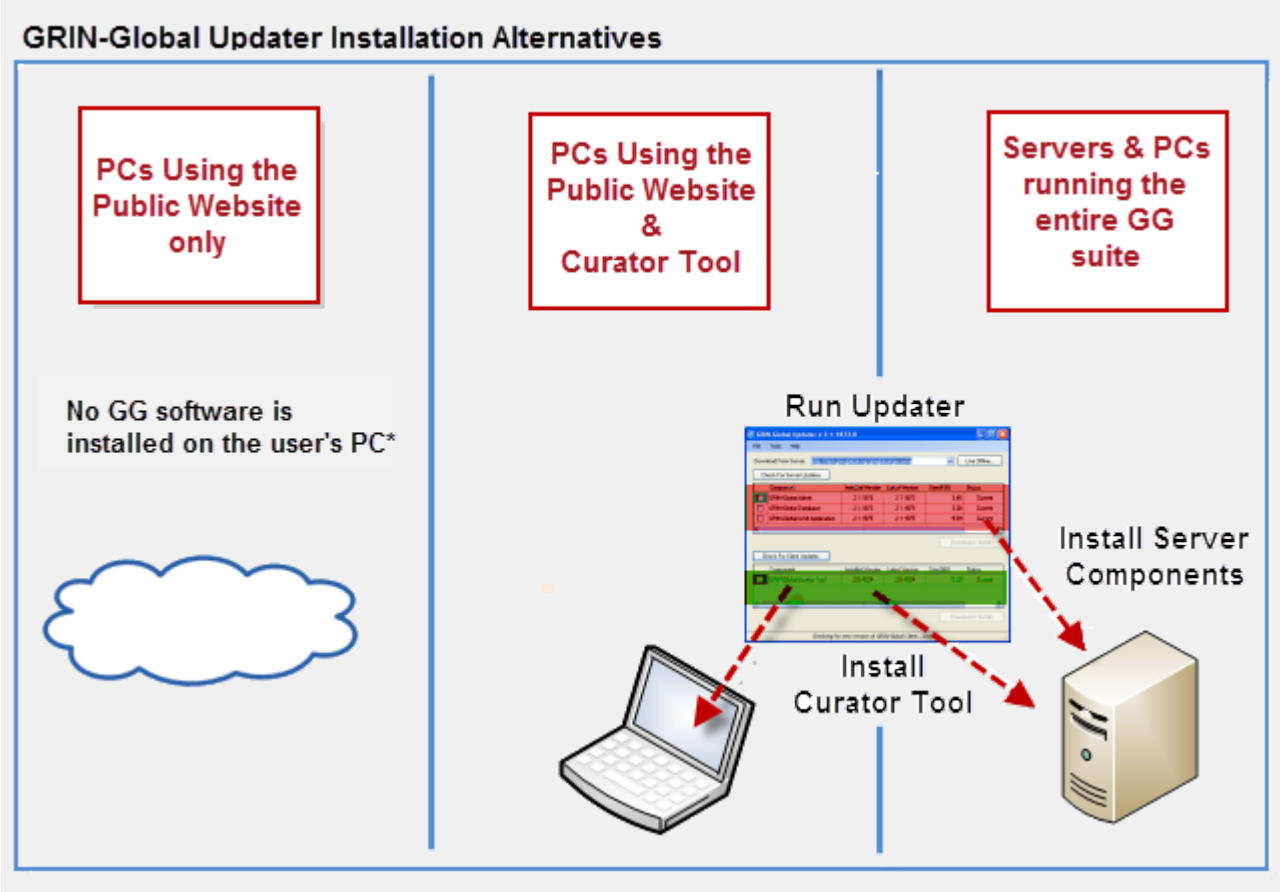
Genebank personnel will most likely use the browser and the Public Website as a tool for reviewing germplasm in the same manner as germplasm requestors do , but they will also use the **Curator Tool** to edit and maintain the genebank germplasm data. In larger organizations, the genebank's personnel will be accessing GRIN-Global data stored on the organization's remote server. Only the client applications, the Curator Tool and the Search Tool, will be installed on the genebank user's PC. (In the process of installing the CT, the Search Tool is automatically installed.)

Organization Server

Generally, when an organization runs a server computer, all of the GG server components will be installed on the server. Alternatively, the server may not necessarily have the CT or the Search Tool installed on the server, but it could – this is handy if the GG administrator intends to test the database when logged onto the server.

In smaller genebanks, the user's PC could also serve as a server – in this scenario the user's PC is the "localhost" – the user's PC is doing double duty , acting as a server, and also running the client, the Curator Tool .

The following diagram illustrates the three alternatives.

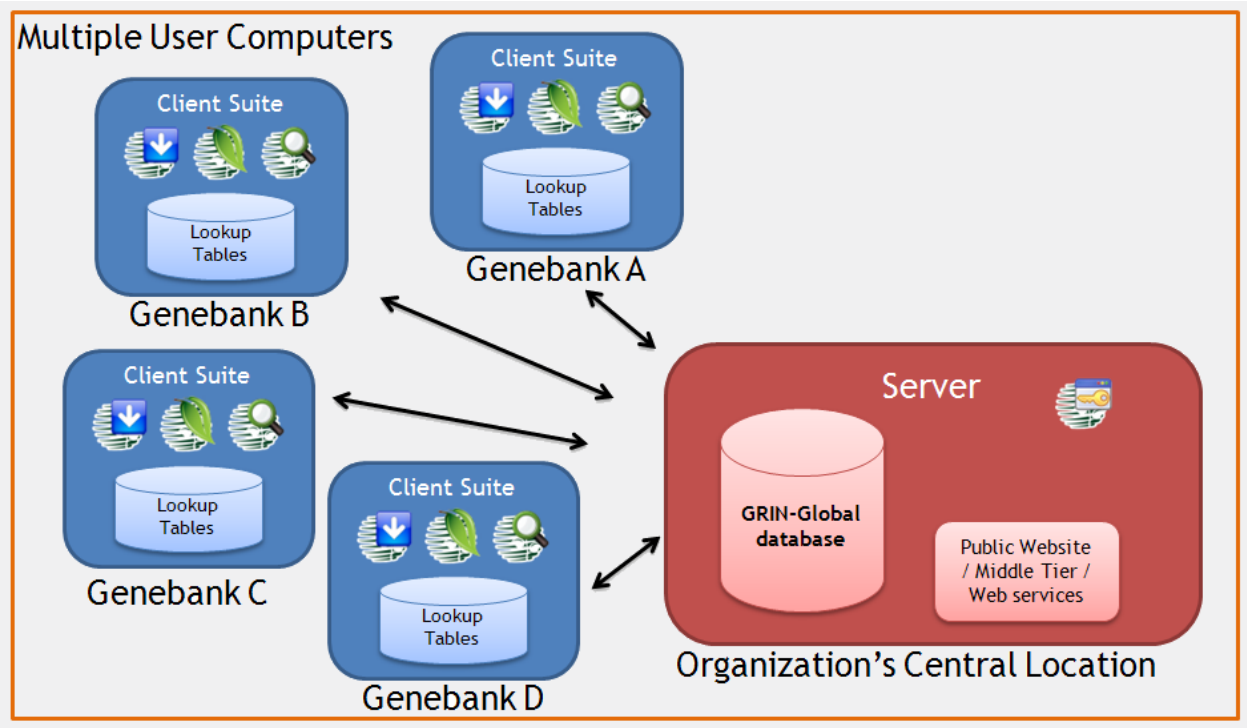


Note

* For the first alternative, when the user only accesses data via the Public Website, no GRIN-Global software is installed on the user's PC. The administrator will install GRIN-Global on a server, (the third alternative above), and then provide the user with the Public Website's URL. In the second alternative, only the CT is installed on the user's PC – typical of a genebank user who will be maintaining the GG data.

For many organizations, especially larger ones, the GG server components are installed on an organizational server. In smaller organizations it is possible to install everything on the user's PC, but then that PC is also acting as a server, which is fine if the user is the only person who will be maintain the data.

Networked PCs



Updater Program is Used for Installing the Other GRIN-Global Components (both Server or Client)

To install either the client or the GRIN-Global server components, use the GG **Updater** program. (When a user will only be accessing data via the GG Public Website, there is no installation required – the Public Website is accessed via a standard browser.)

Admin Tool

This tool handles many important administrative "behind the scenes" functions such as adding users, assigning security privileges, creating data views, and the bulk importing of data.

Database

When the **GRIN-Global Database** component is selected, a local copy of the GRIN-Global database is installed on the user's PC.

Web Application (Middle-Tier code, the Public Website, and Web Services)

The GRIN-Global **Web Application** is the heart of the GRIN-Global Application Suite and must be installed on the server. The "Web Application" contains the actual business layer code ("middle-tier") and hosts the web services to access the business layer code. The programming code for the middle tier, the Public Website, and Web Services are all stored together. (For simplicity, this will be referred to as the "Web Application" rather than "middle tier / web site / web services.")

Middle-Tier

The "Middle Tier" provides end points to which clients can connect, regardless of which programming language or operating system that client requires, retrieves and updates data; provides an infrastructure for reading, creating, or manipulating updatable views of data without code changes, works with several

different back-end database engines transparently, and enforces business logic (e.g. an accession must belong to a specific taxonomy).

Public Website

The GRIN-Global **Public Website** is a browser-based application that provides "public" user access to the database. Users are able to search and view accession information and are able to order germplasm using a browser cart approach.

Web Services

Web Services provide a standard means for different software applications, running on a variety of platforms and/or frameworks, to communicate and exchange data with the GRIN-Global database.

Curator Tool

The **GRIN-Global Curator Tool** is used by curators and users who create and manage genebank data. (These users will typically use the organization's Public Website as well.)

Microsoft Tools / Prerequisites

In order to run the complete GRIN-Global suite of applications on a user's PC, there are additional (free) tools that originate from Microsoft and must be installed.

If the user will be using the Curator Tool to access data stored on a server, or will be using only the Public Website, then the Microsoft tools do not need to be installed. (Additional details on the Microsoft prerequisites are explained on the next page.)

General Requirements When Installing the Database on the User's PC "a localhost"

- The user installing GRIN-Global must have *administrator rights* to the PC
  Note: Complete directions for handling the situation when a user does not have admin rights are detailed on page 38.

- Requires an Internet browser: Windows Internet Explorer and Mozilla Firefox are supported; the PC's browser must be Active-X enabled

Hardware requirements:

- 20 GB free hard drive space
- the suggested memory for running the Operating System + 2 GB RAM for running GRIN-Global

Operating Systems

- Windows XP Pro Service Pack 3
- Windows Vista (Ultimate; 32- or 64- bit)
- Windows 7 (Ultimate; 32- or 64- bit)

GG can be installed on Windows 8. When installing GG on Windows Server 2012 or SQL Server 2012, you will need to do some installation steps manually. Please refer to the details on this page: http://sun.ars-grin.gov/npgs/gg_2012_install.html

Prerequisites When the GRIN-Global Database and Admin Tool is Installed

Several Microsoft and Crystal Reports components are required when the GRIN-Global Database and Admin Tool is installed on a user's PC. At appropriate times, you will be guided by the installation wizard to download these Microsoft programs, which will be downloaded from Microsoft's website if they are not already installed on the PC. They do not need to be reinstalled; however, when the PC has an older version than what is recommended, you should update to the recommended version. (Alternatively, at any time, you can manually download these from Microsoft's site.)

Prerequisites

Component	Purpose
Windows Installer 4.5	Installer is the software used for the installation, maintenance, and removal of the GRIN-Global software onto a Windows-based computer
Windows Powershell 1.0	PowerShell is Microsoft's task automation framework, consisting of a command-line shell and associated scripting language built on top of, and integrated with the .NET Framework
Visual Studio Tools for Applications 2.0	Provides items required by the software code running GRIN-Global
Crystal Reports for Visual Studio 2008	SAP's Crystal Reports viewer is a free, standalone Report file viewer that enables the user to open and view interactive reports designed for the Curator Tool
SQL Server 2008	Required on all computers where the Curator Tool is installed; the CT maintains a small SQL Server database of lookup tables on the user's PC
.NET Framework 3.5 (Service Pack 1)	The .NET Framework is a software framework that supports programming language interoperability where programs can use code written in other languages. .NET provides important services such as security, memory management, and exception handling.

Sometimes when installing a Microsoft application, you may be required to reboot. After rebooting, the Microsoft application will finish installing, but the GRIN-Global **Updater** program will not automatically launch and continue. Therefore, when a reboot is involved, you will need to launch **Updater** manually again. (Click the Windows **Start button**; select **GRIN-Global Updater**.) Reselect from the Updater window (example on page 10), the respective GRIN-Global application(s) to install; click the **Download/Install** button.

When installing Microsoft's SQL Server Express on a Windows 7 64-bit operating system, if you do not have Windows Service Pack 1 installed, a message will warn you that the SQL Server Express software has a known problem with the operating system. Rather than abort the installation, proceed with the install, and then update to Windows 7 Service Pack 1.

Updater Program

In order to install any GRIN-Global component, you must first install the GRIN-Global **Updater** program. The following installation instructions provide step-by-step instructions; however, if your organization has a firewall, read the *Installing with Firewalls* section on page 41 before following these directions.

Step-by-Step Installation Directions

Step 1

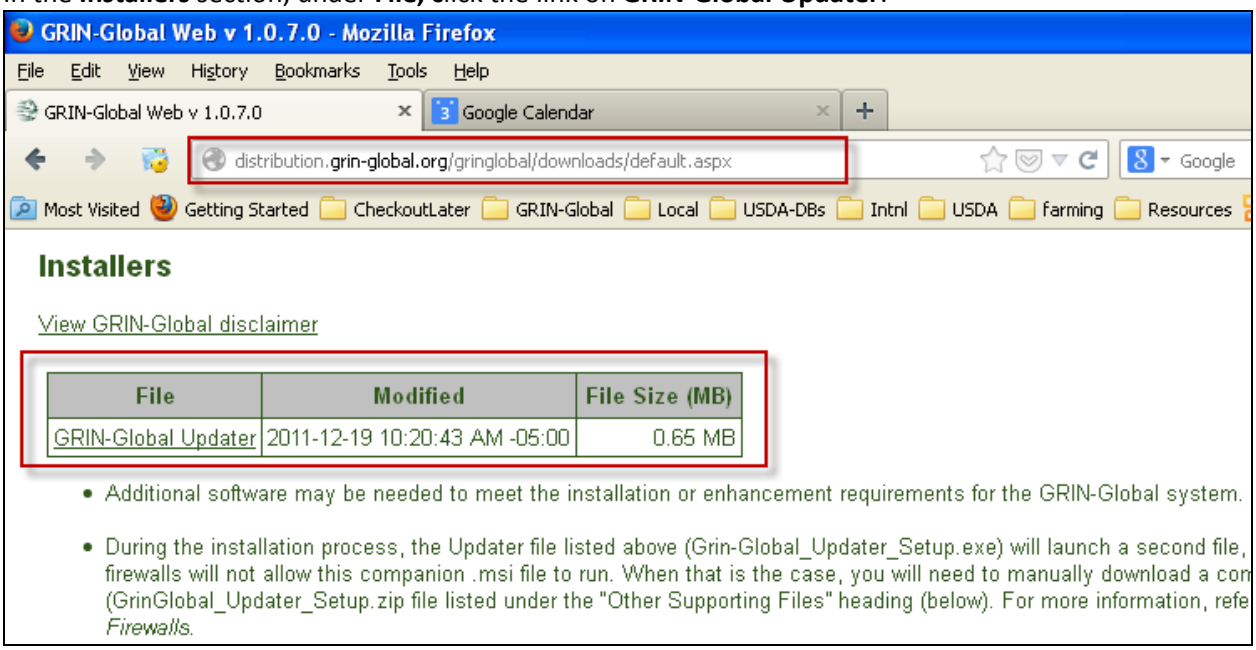
Using your browser, such as Microsoft's Internet Explorer or Mozilla Firefox, download and install the **Updater** program from: http://distribution.grin-global.org/gringlobal/downloads/default.aspx

Note The Updater version number is not significant – an older Updater version can be used to install the latest GG components. The address shown in the following illustration is just an example. Each organizational situation will differ.

December, 2013 Note: Only the Updater program is on distribution; the component files are not. After you install the GG Updater program, you need to specify the address where the components are stored. As of December 2013, the location is : http://sun.ars-grin.gov/~dbmuke/cgi-bin/gringlobal/1.7.1/ The directions for using this location are on page 18.

Note The image below may not necessarily reflect the current GG version numbering; basically, the Updater will work with any version of GG.

In the **Installers** section, under **File, c**lick the link on **GRIN-Global Updater**:



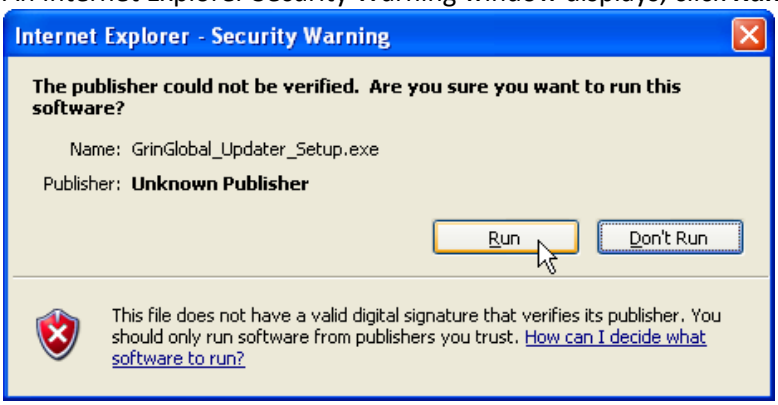
Depending on which browser you are using, your next step will vary slightly. Since most browsers emulate either Microsoft's Internet Explorer or the Mozilla Firefox browser, steps 2A and 2B were written to accommodate the differences.

- Proceed with step 2A if you are using Internet Explorer
- Skip to step 2B if you are using Firefox or a similar browser

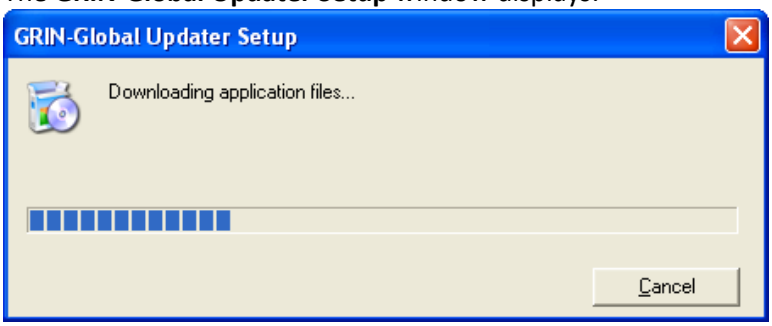
Step 2A: (Using Microsoft's Internet Explorer)

The **File Download** window displays. Unless you want to postpone initiating setup, click on the **Run** button to proceed.

An Internet Explorer Security Warning window displays; click **Run**.



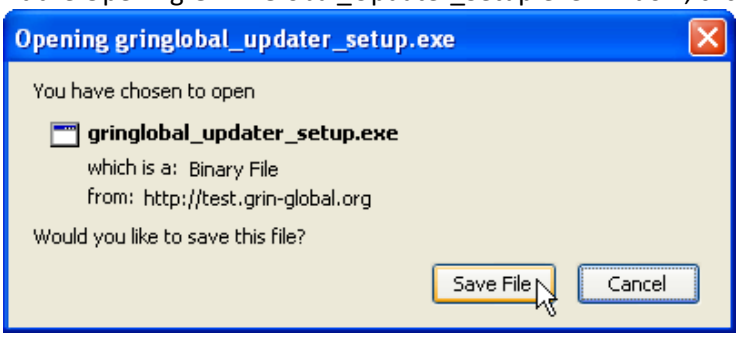
The **GRIN-Global Updater Setup** window displays:



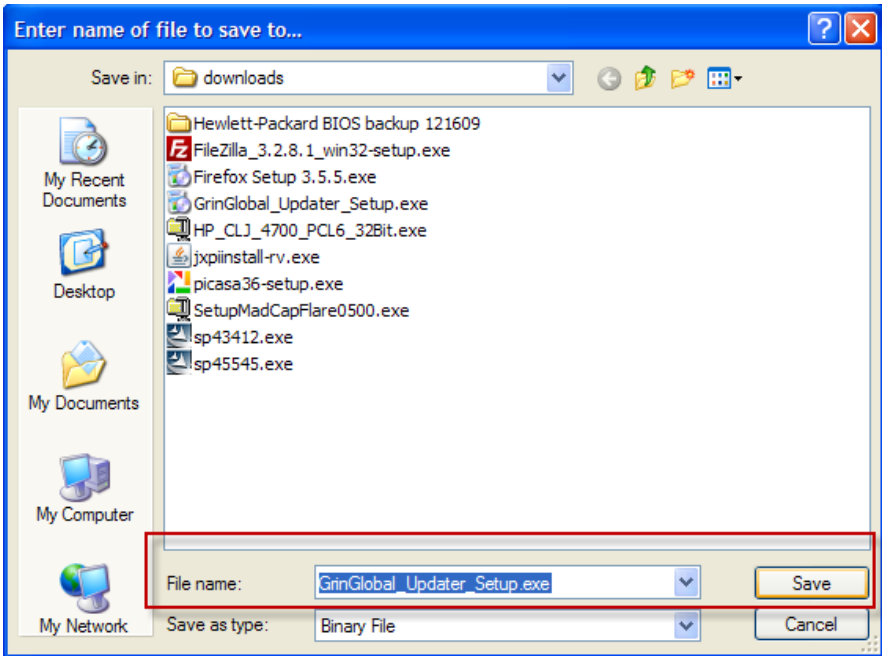
Proceed to Step 3 on page 13.

Step 2B: (Using Mozilla Firefox)

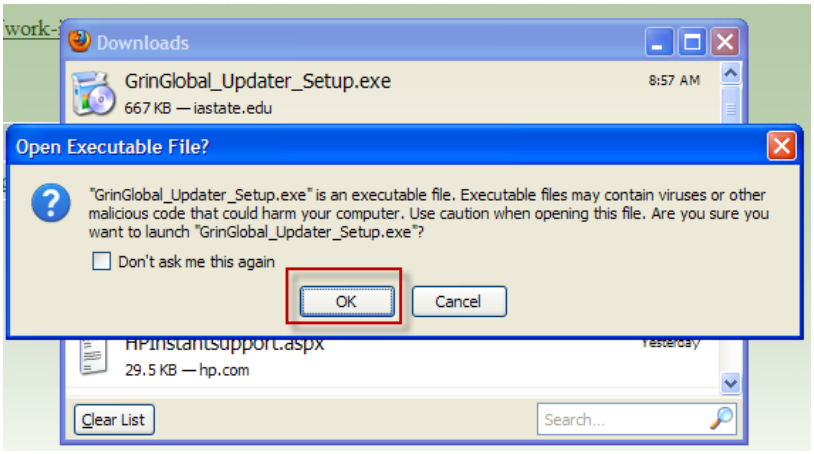
At the Opening GRIN-Global_Updater_Setup.exe window, click the Save File button.



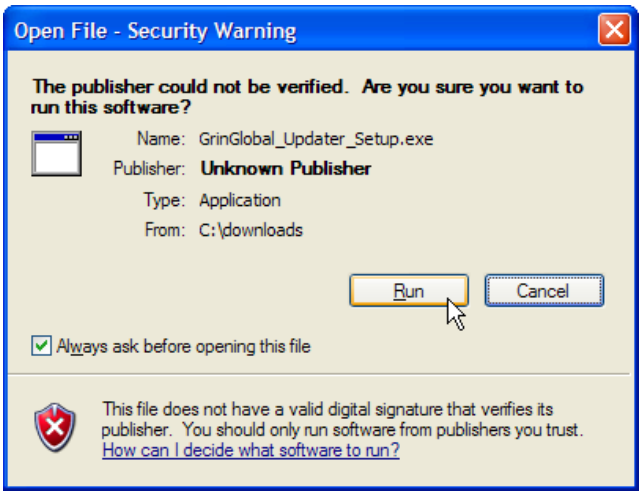
Save the file.



Launch the file. (Double-click its filename if in Windows Explorer, or if in your browser, click on the filename. Click **OK**.)

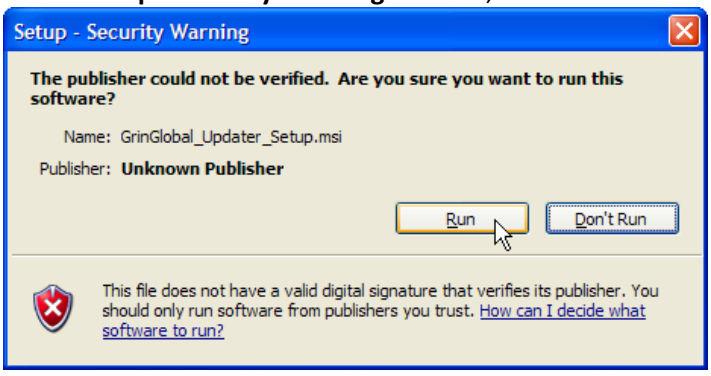


Click the **Run** button.



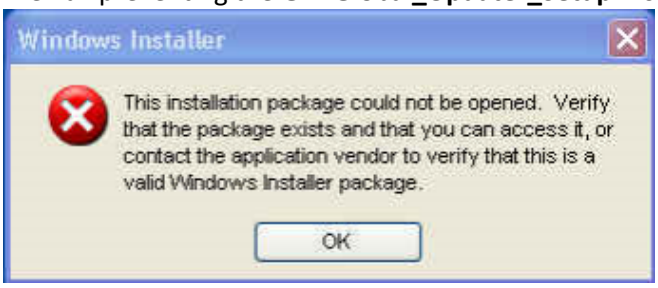
Step 3

At the **Setup - Security Warning** window, click the **Run** button.



Organizational Firewalls

If the following window displays instead of the window above, your organization most likely has a firewall preventing the **GrinGlobal_Updater_Setup.msi ("setup.msi")** file from executing properly:



When working with firewalls, follow the directions *Installing with Firewalls* section on page 41.

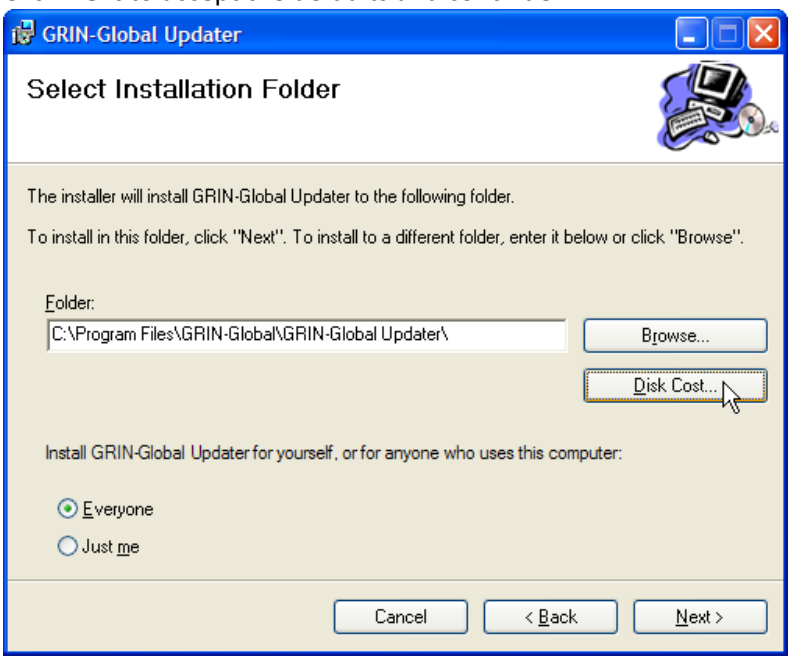
Step 4

For many of the **Setup Wizard** windows, click the **Next** button to continue.

Step 5

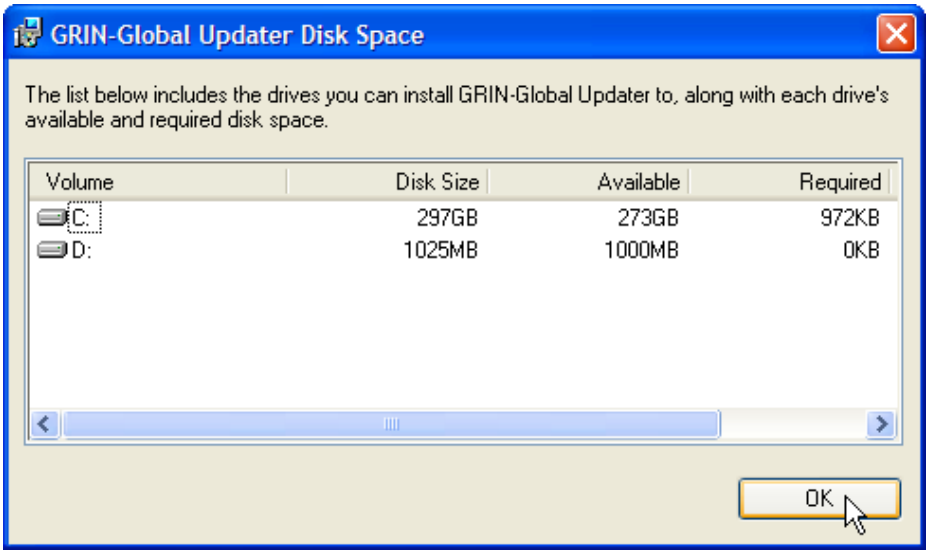
On the **Select Installation Folder** window you can change the default folder location and also indicate who will have access to the GRIN-Global programs (all users (**Everyone**) or the current user (**Just me**)). Generally, you can accept the defaults. If a different location is desired, click **Browse**. (Another option is the **Disk Cost** button which can be used to determine if you have enough space on your drive. The complete installation requires less than 1 GB.)

Click **Next** to accept the defaults and continue.



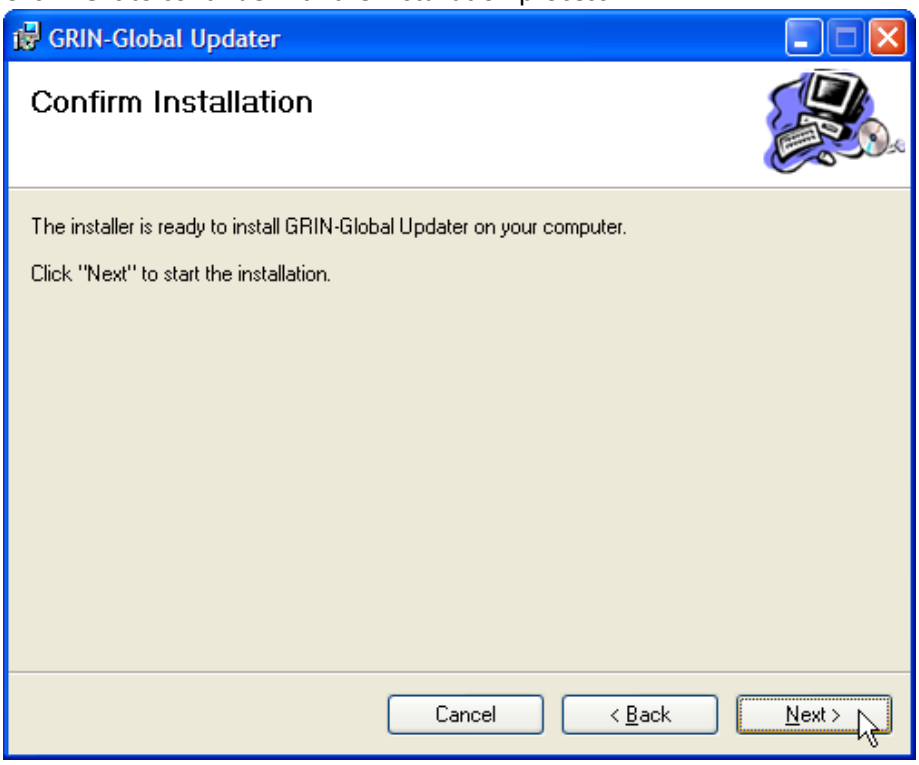
(Optional Step When the Disk Cost Button is Selected)

The **Updater Disk Space** window, indicating available and required space, is displayed when the **Disk Cost** button on the **Select Installation Folder** window is clicked. Click **OK** to continue.



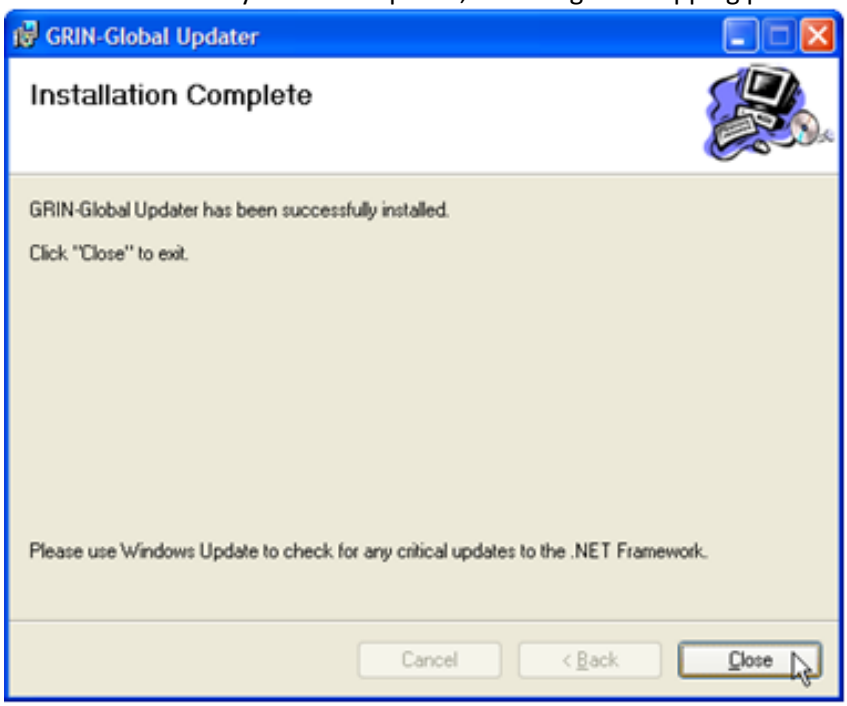
Step 6

Click **Next** to continue with the Installation process.



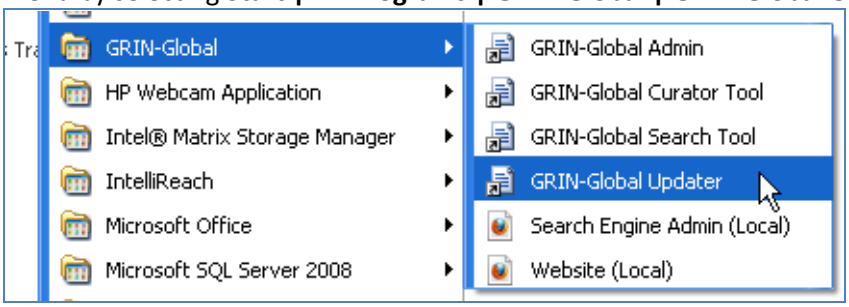
Step 7

Click **Close**. Note: If you need to pause, this is a good stopping point.



Step 8

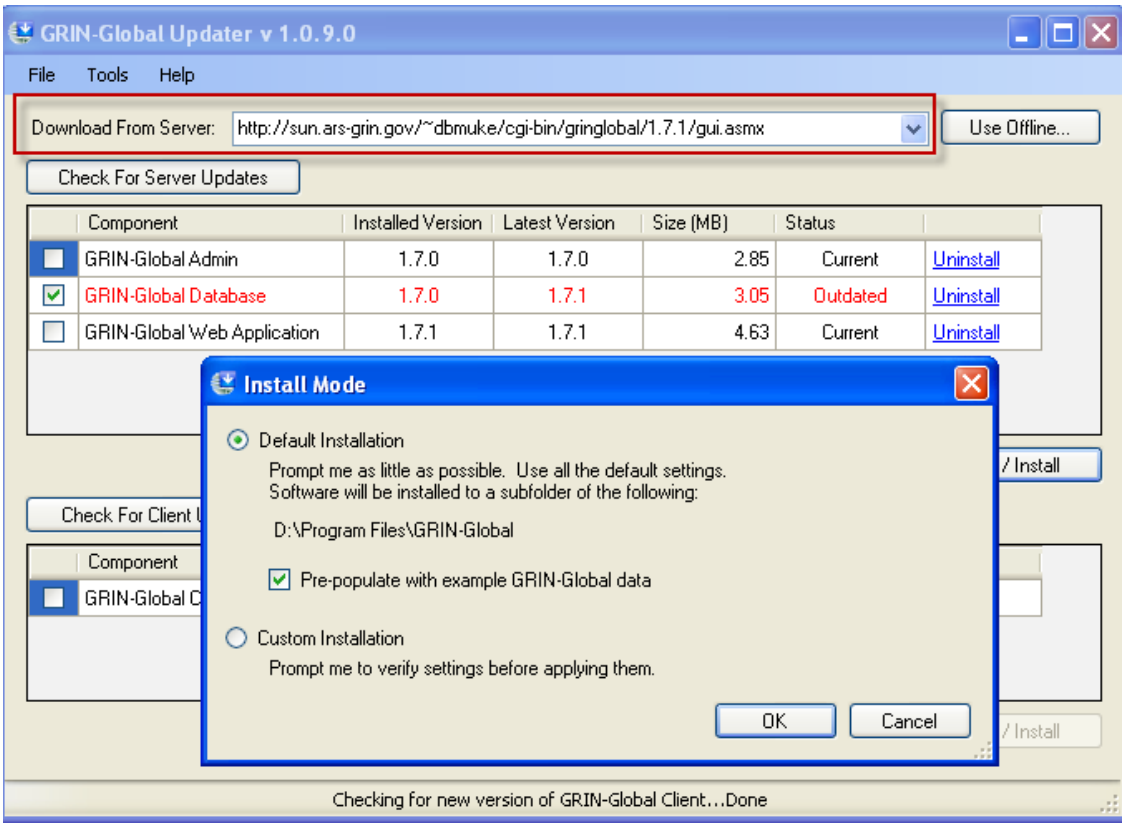
[Note: if you interrupt the installation process, you can return to this point via the Windows **Programs** menu by selecting **Start | All Programs | GRIN-Global | GRIN-Global Updater**.]



Determining if Your GRIN-Global Software Components are Current

The GRIN-Global **Updater** window is used to check for both server and client updates. In the following window, one of the server components, the **Database** component, is displaying an "Outdated" Status and has not been updated, whereas the other server components, **Admin** and **Web Application**, are current. The lower, client panel indicates that the Curator Tool does have a "Current" status.

The following screen shot is an example, an does not necessarily reflect the current version numbers of the software.



December, 2013 Note: For our current GG testers, input the following address for the server information:

http://sun.ars-grin.gov/~dbmuke/cgi-bin/gringlobal/1.7.1/gui.asmx

Update the three server components (listed in the top half of the **Updater** window) when you are updating a server in a networked environment (alternative #2 in the figure on page 20). You will also download the server components when operating a stand-alone PC that will be serving as the localhost as well the client (alternative #1 in the figure on page 20).

If you are installing only the *Curator Tool client on your PC*, you do not need to download any of the *server* components.

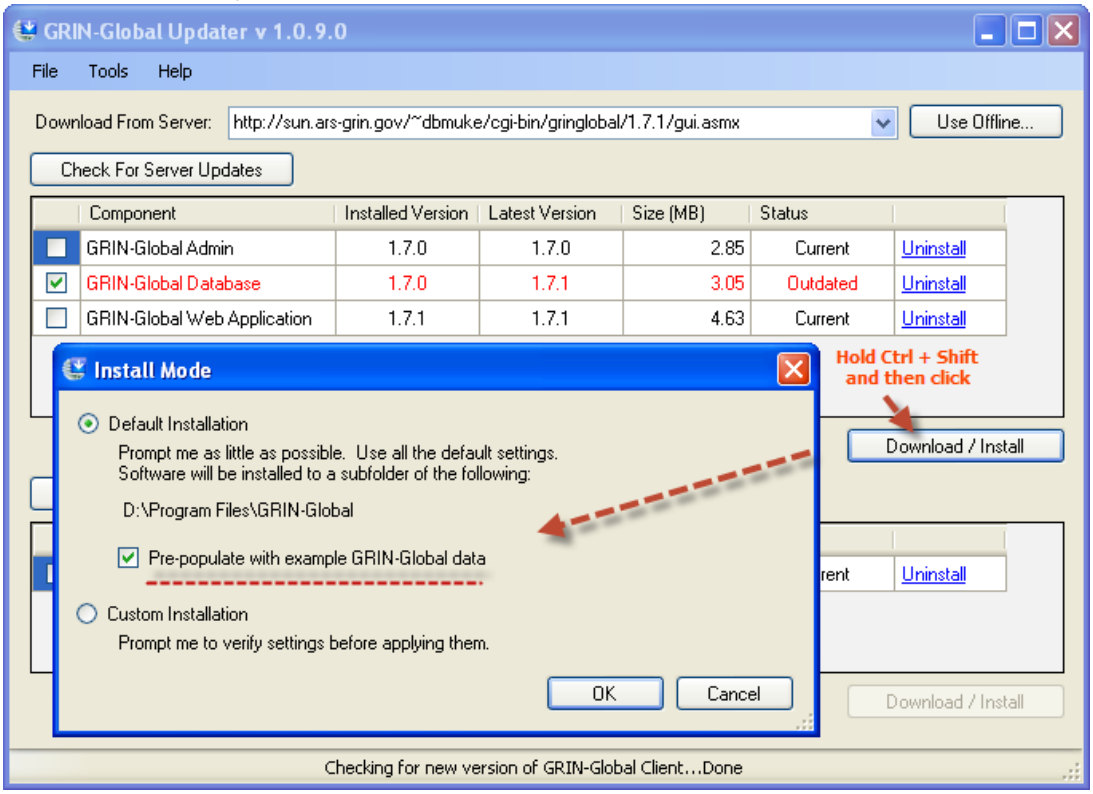
To Download/Install

As an option, you can download the Taxonomy and Geography data that was copied from the U.S. GRIN system. **This option is highly recommended.**

First select the components' checkboxes (as shown in the screen below).

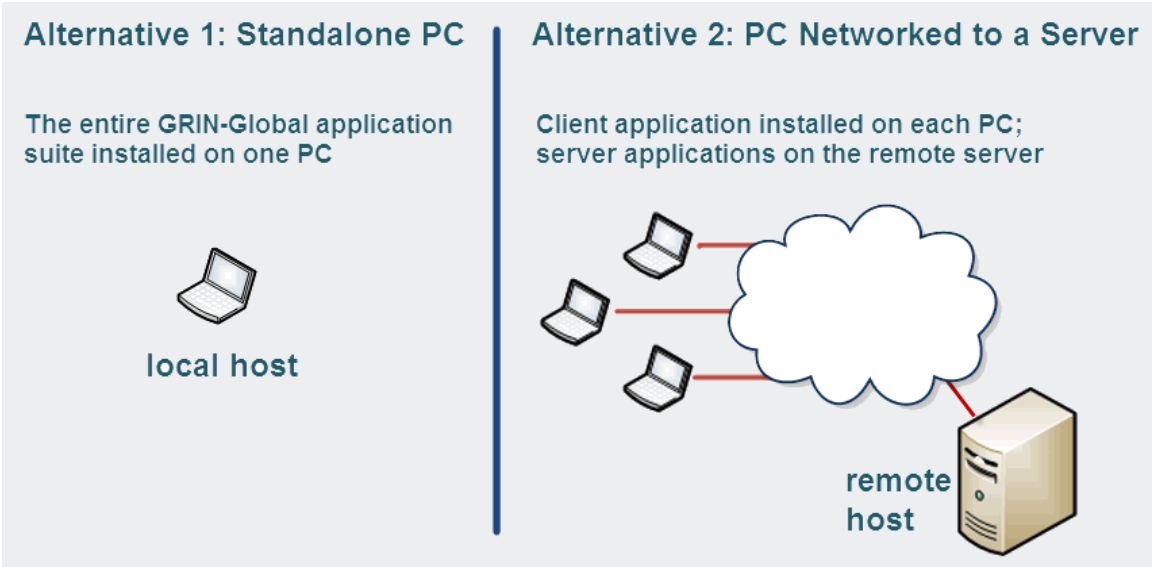
To download the **Taxonomy** and **Geography** data , press and hold the **Ctrl + Shift** keys *before clicking* the **Download/Install** button. (If you do not want to load the Taxonomy and Geography data, skip the **Ctrl** + **Shift** technique.)

Click the **Download/Install** button:



Local vs. Remote

You must have a network/Internet connection to connect to a remote server. However, most organizations will most likely install the server on a remote server PC and then install the Curator Tool on the various user PCs. The localhost option will be used by smaller genebanks which will not have the data sharing by multiple users.



For installation directions for just the client application, the Curator Tool, go to page 32.

Server Components: Installing (or Updating)

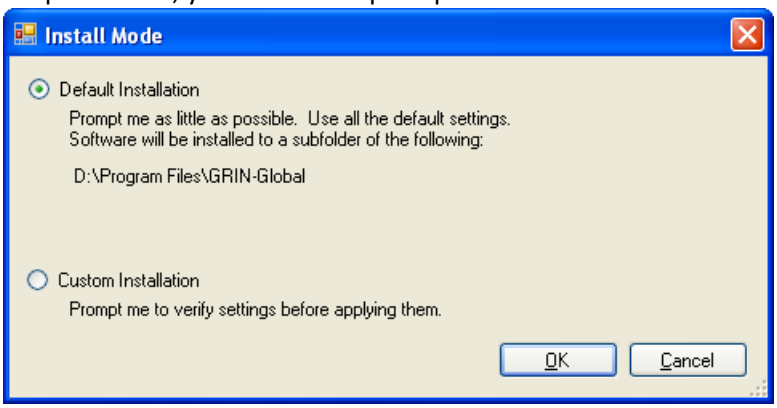
There are three main server components in the GRIN-Global suite:

GRIN-Global Components Installed via the Updater

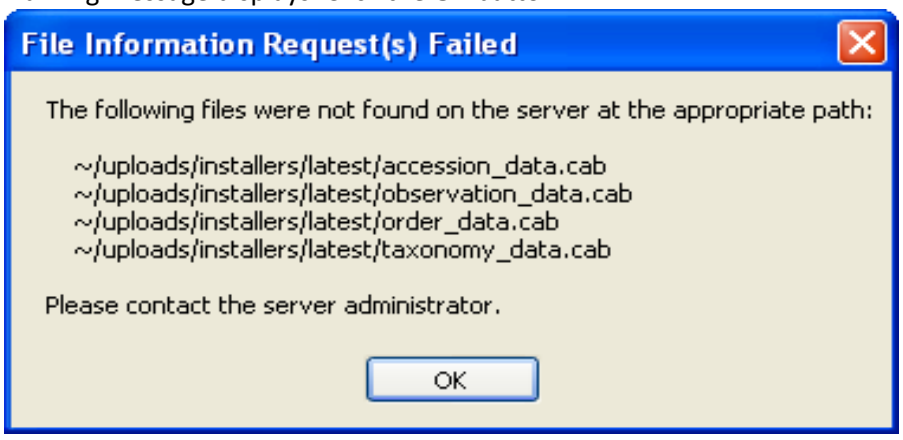
Component	Type	Purpose
Admin	Server	Tool for GRIN-Global administrators to create new logins (users), new cooperators, and data views, and assign security levels
Database	Server	A local copy of the database on the PC
Web Application	Server	The middle tier web services, shopping cart, etc.
[Curator Tool]	Client	[Note: this is the client program and may eventually be removed from the Updater window, but for now, it is shown at the bottom half of the Updater window. The CT application is designed primarily for curators and managers of genebanks for viewing and manipulating GRIN-Global data.]

Default and Custom Installation Options

When installing any of the GG components, you will be prompted with an **Install Mode** window in which you can select either **Default Installation** or **Custom Installation**. Default is recommended and is the simplest to do; you will not be prompted to confirm intermediate screens.

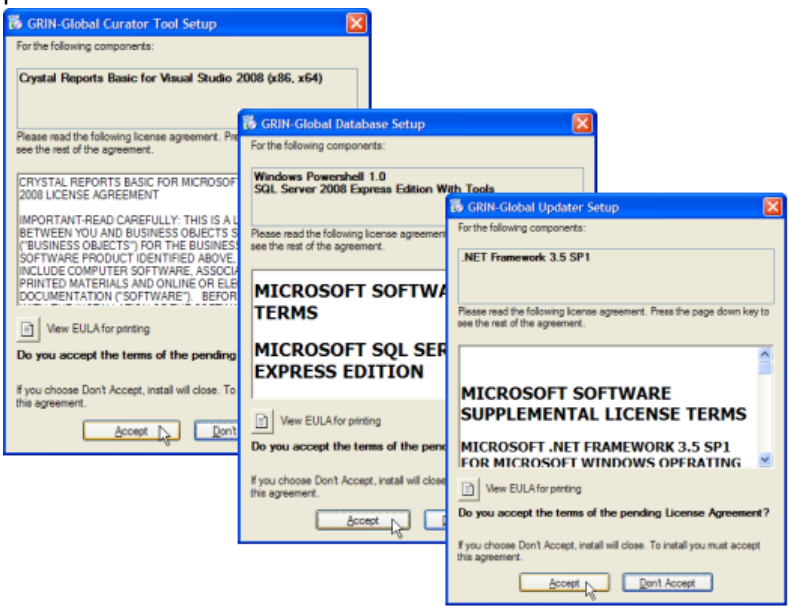


When you click the **Continue** button, the process will continue, but first the following window with a warning message displays. Click the **OK** button:



General Requirements – Installing Microsoft Applications

When the respective acceptance window displays for a Microsoft prerequisite program, click **Accept** to proceed with the installation.



Sometimes when installing a Microsoft application, you may be required to reboot. (We use the word "may" here because throughout the development period, Microsoft has continued to change the installation procedures of these products.) After rebooting, the Microsoft application will finish installing, but the GRIN-Global **Updater** program will not automatically launch and continue. Therefore, when a reboot is involved, you will need to launch **Updater** manually again. (Click the Windows **Start button**; select **GRIN-Global Updater**.) Reselect the respective GRIN-Global application(s) to install; click **Download/Install**.

When installing GG on Windows Server 2012 or SQL Server 2012, you will need to do some installation steps manually. Please refer to the details on this page: http://sun.ars-grin.gov/npgs/gg_2012_install.html

Database: Installing (or Updating)

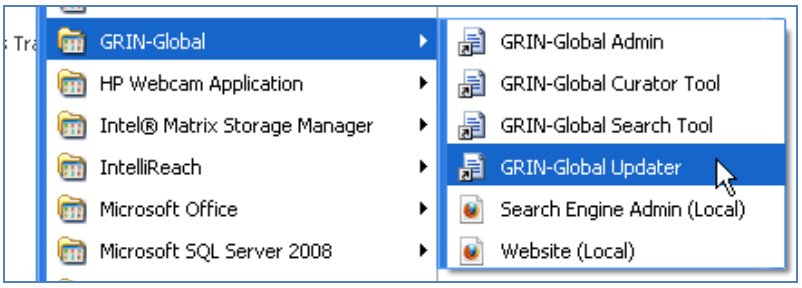
When the **GRIN-Global Database** component is selected, a local copy of the GRIN-Global database will be installed on your PC's hard drive.

You should need complete this step if the PC will be used in a networked environment and the GRIN-Global database is installed elsewhere on a remote server. This step is only completed when the PC acts as a server for the local GG database stored on the PC.

Step-by-Step Directions

Step 1

Select **Start | All Programs | GRIN-Global | GRIN-Global Updater**



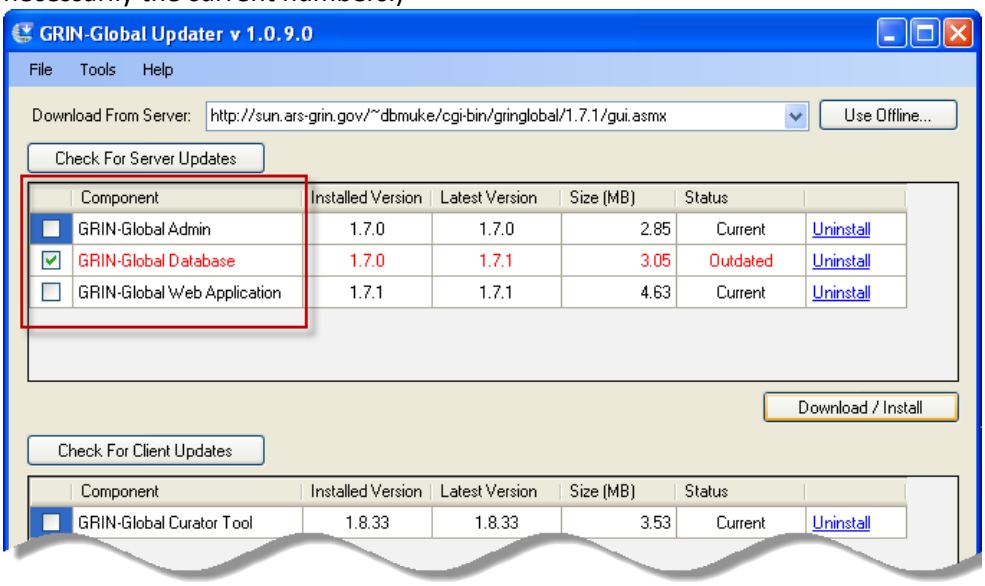
Step 2

Nov 5, 2013 - for the server address, use:

http://sun.ars-grin.gov/~dbmuke/cgi-bin/gringlobal/1.7.1/

First click the **Check for Server Updates** button. The **Updater** screen displays the versions and statuses for each of the server components. To run the Curator Tool from your local PC, select all of the Components listed in the top section ("Server Updates.") (The version numbers below are not

necessarily the current numbers.)



Notes on Selecting a Database

When running the Curator Tool locally on your PC's hard drive, a database engine is required. The CT has been tested on the following four database products:

- Microsoft SQL Server
- MySQL
- PostgreSQL
- Oracle

(October 23, 2013: Currently only for Microsoft SQL Server for versions post- 1.07. Do not use with the other databases at this time.)

In addition to one of the four database engines, even if the database is installed on a remote server, Microsoft SQL Server will be installed on the user's PC. The SQL Server database on the user's PC will manage the Curator Tool lookup tables.

If you are installing the Database, Search Engine, or Web App, and a local database engine is not found, a database engine dialog is shown which prompts you to choose which engine you intend to use.

The links to the four databases in the table below are the same links that are in the Updater application. The following directions are for installing on SQL Server; -- the other engines will follow a similar installation procedure.

Database	Source
MS SQL Server	http://www.microsoft.com/web/gallery/install.aspx?appsxml=&appid=SQLExpressTools;SQLExpressTools
MySQL	http://dev.mysql.com/downloads/mysql/5.1.html#win32
Oracle	http://www.oracle.com/technology/software/products/database/xe/htdocs/102xewinsoft.html
PostgreSQL	http://www.postgresql.org/download/windows

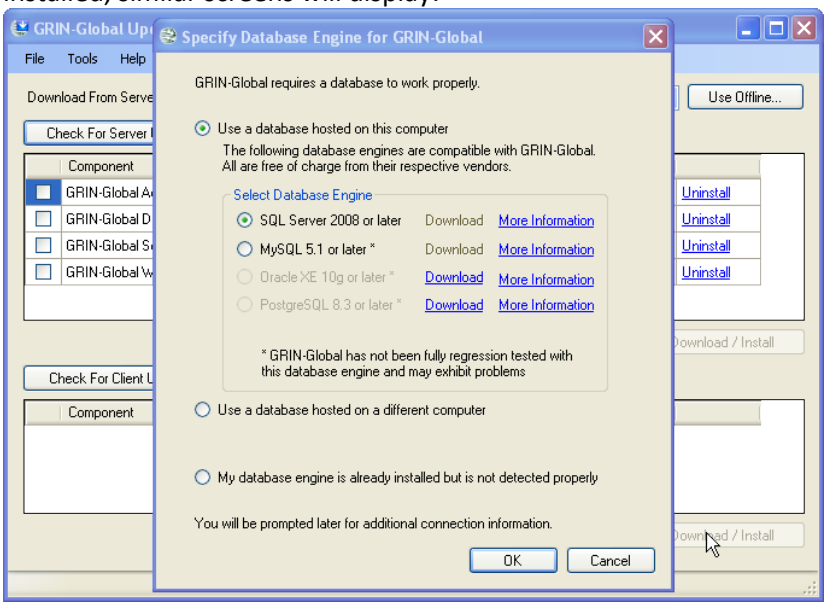
As of 11/1/2013, the latest release of GG is being distributed with the caveat that it has not been fully integrated and tested for the four database engines. Currently only MS SQL Server is supported. It is planned that the official 2.0 version will support the four database engines.

MS SQL Server (Installing)

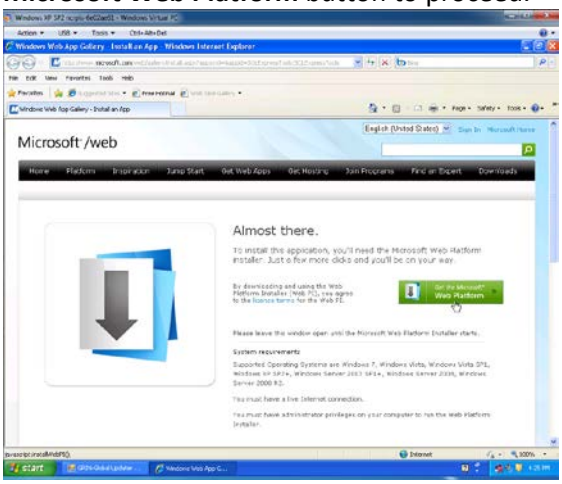
Note

Microsoft updates its screens so the actual screens may vary from the following screen examples.

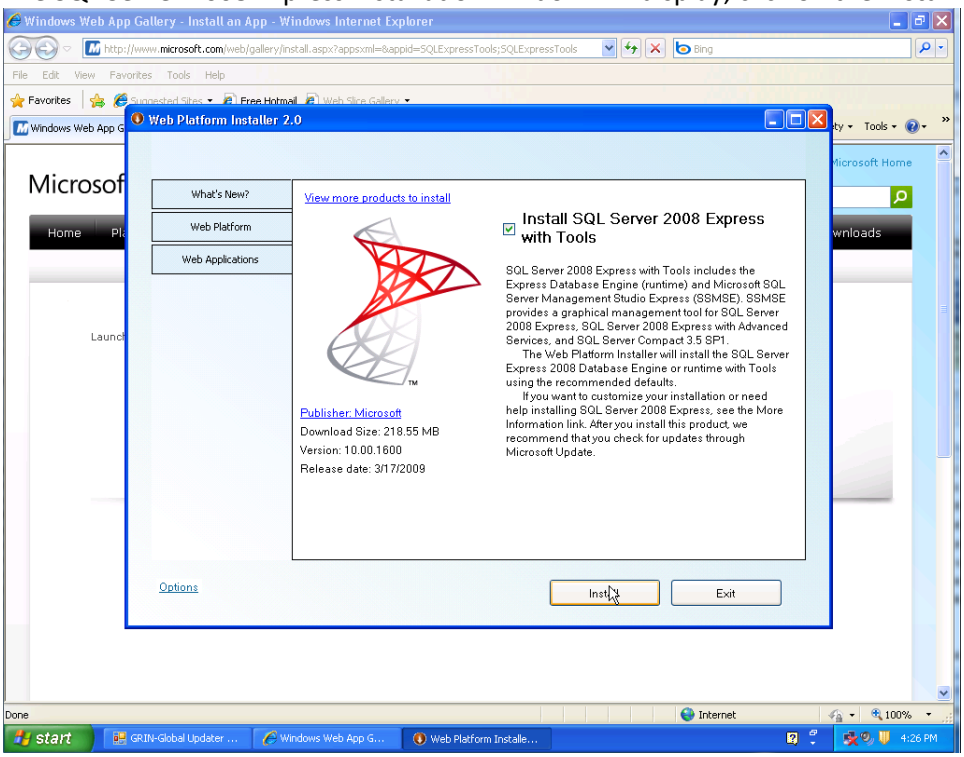
The screens that follow reflect the installation of Microsoft SQL Server. When the other engines are installed, similar screens will display:



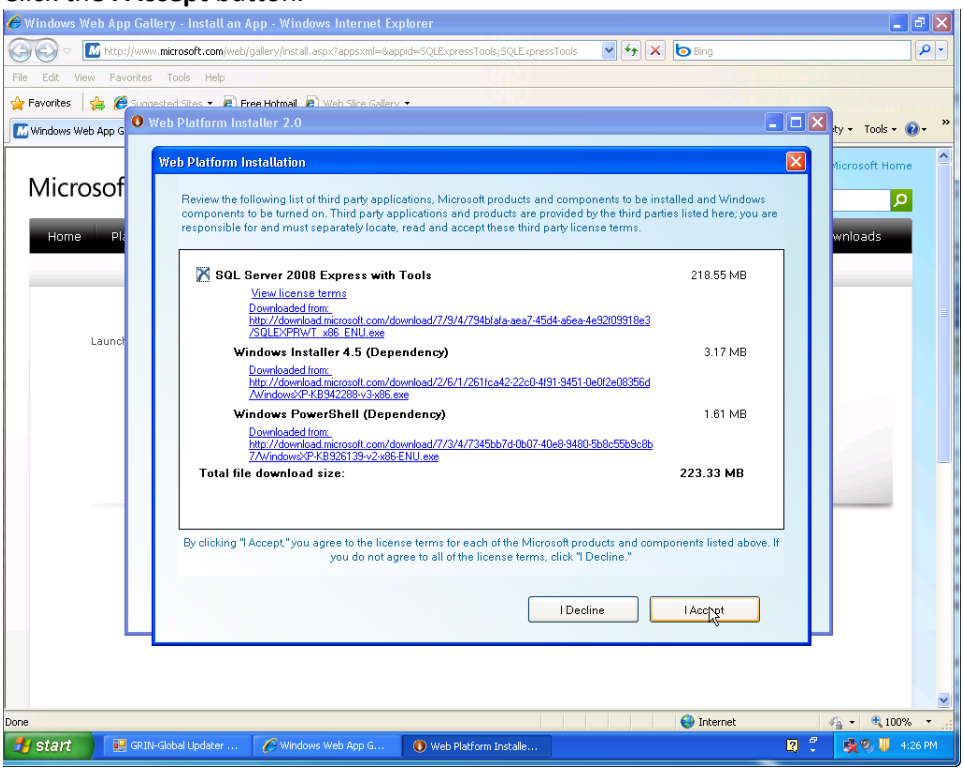
As part of the installation, Microsoft will install its "Web Platform" installer. Click on the **Get the Microsoft Web Platform** button to proceed.



The SQL Server 2008 Express installation window will display; click on the **Install** button.

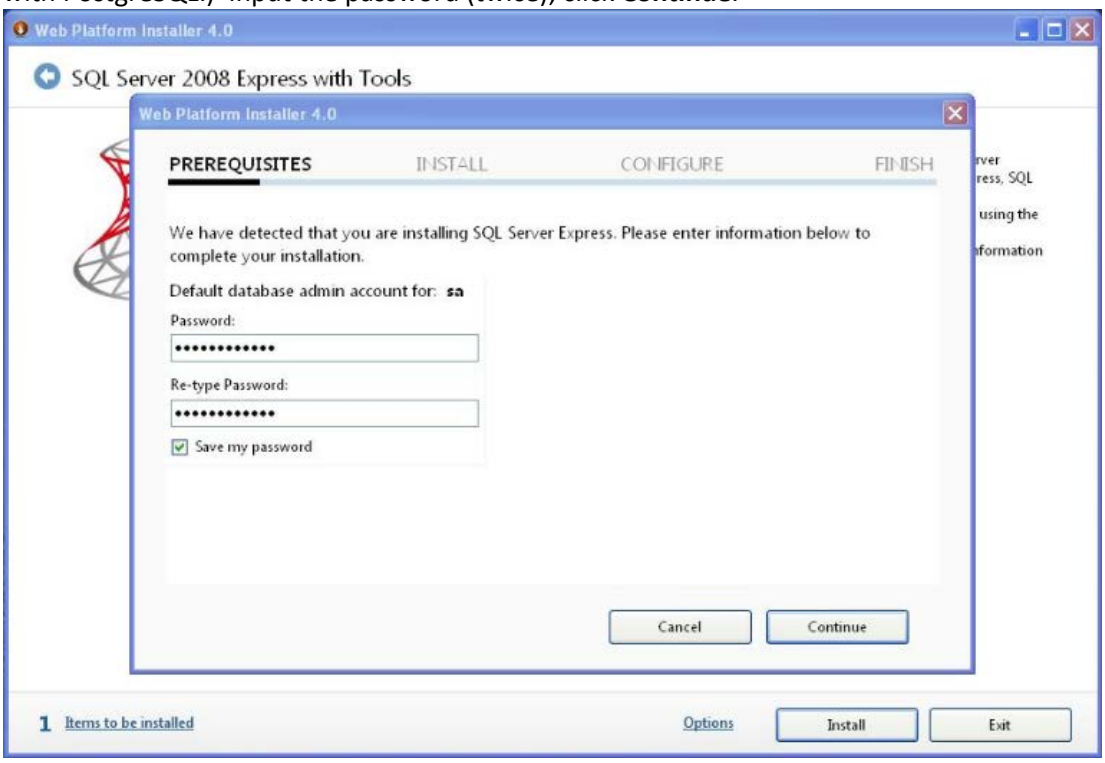


Click the **I Accept** button.



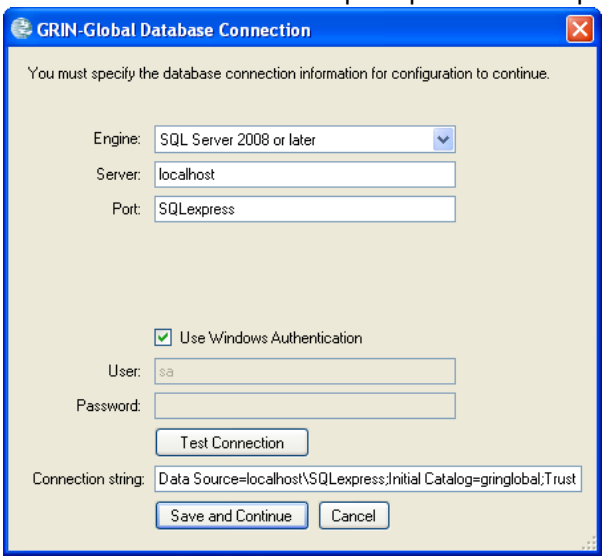
When prompted for authentication mode, select **Windows Integrated Authentication**.

However, in the screen shown below, the server administrator option is being selected. This generally is the recommended option for the other three database engines. (The requested password is the password associated with the database engine administration program such as pgAdmin when working with PostgreSQL.) Input the password (twice); click **Continue**.



Database Setup Wizard

The initial database window prompts for some specific connection information:



Background

All database engines require some kind of authentication to determine what rights you have to various operations. Some allow you to use the credentials with which you login to Windows -- this is known as "Windows Authentication." For this to work properly, your Windows login must be configured in the database engine as a valid user. Other database engines require you to enter a username and password that is specific to the database -- similar to logging in to a website.

To visit a website, all you need is the web address, such as http://www.grin-global.org/. In this example, the server name is grin-global.org. Also, there is an implicit port number of 80. Written explicitly, the address would be: http://www.grin-global.org:80/. This will work for any of your favorite web sites, go ahead and try it! At a bare minimum, a web address consists of a server and a port.

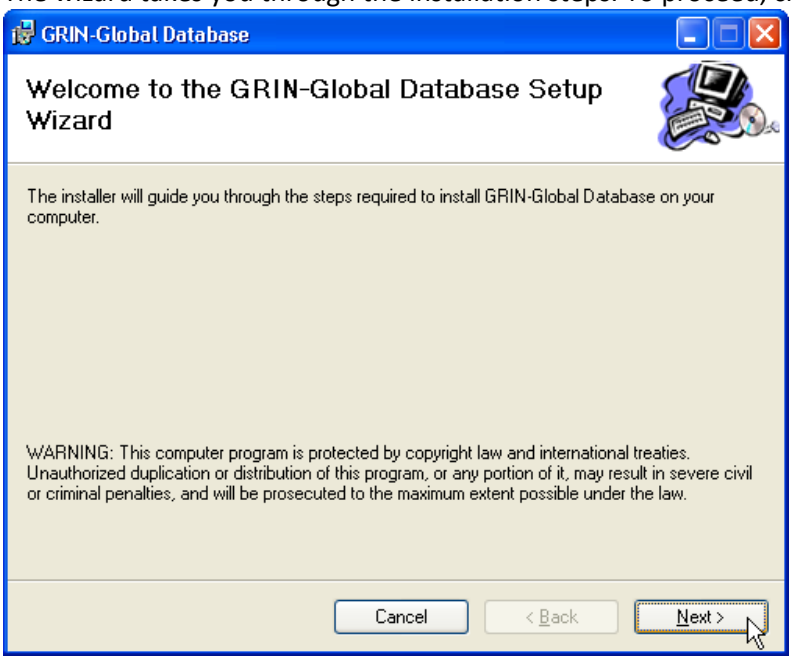
This connection method is exactly the same regardless of what kind of software the web server is running. To connect to a database a similar approach is used -- you must tell it some details about the server to which you are trying to connect.

However, unlike a web server, different database engines require different information when connecting. All require a server name, but some may require a specific "port" as well. Think of this as somewhat similar to the "80" portion of the web address example from above.

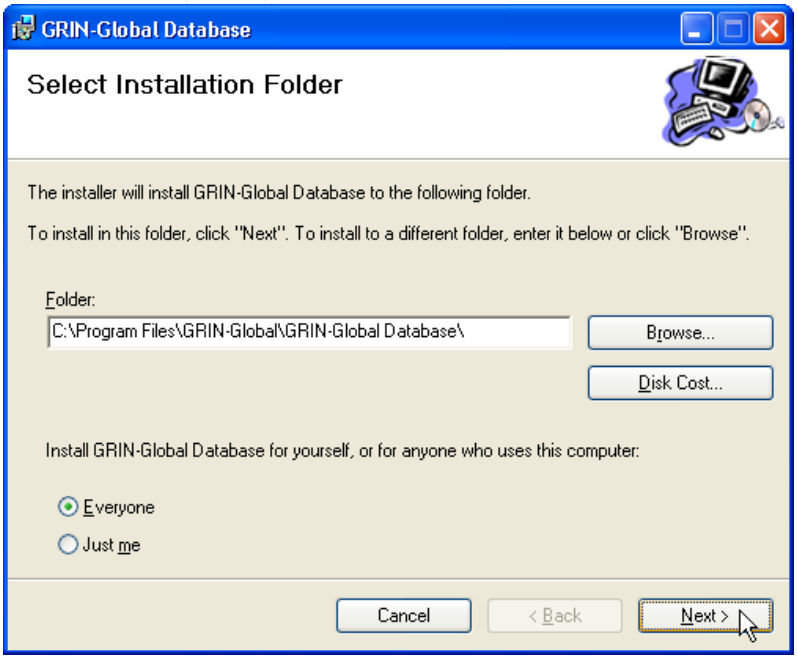
Examples of connecting to the various database engines supported by GRIN-Global (assuming the server name is "localhost"):

Database Engine	Server name	Port
MS SQL Server	localhost	SQLExpress
Oracle	localhost	1521
PostgreSQL	localhost	5432
MySQL	localhost	3306

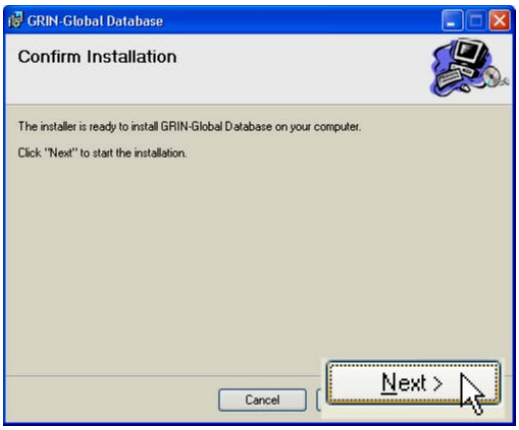
The wizard takes you through the installation steps. To proceed, click **Next**.



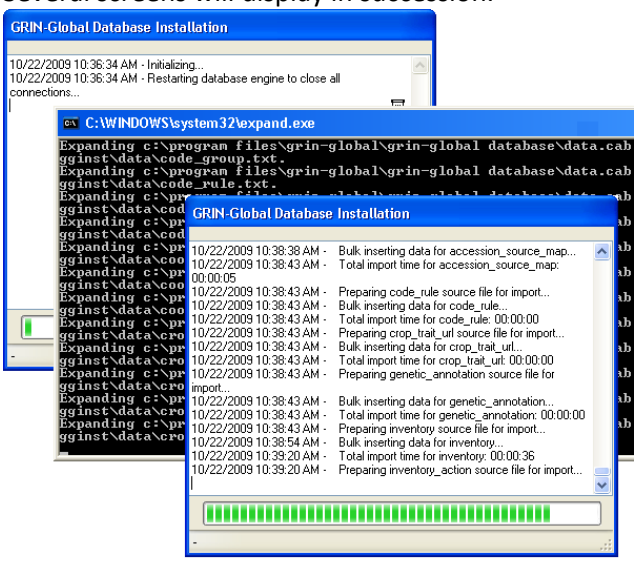
Generally the defaults on this window will be adequate for most users. If you need to change something on this window, do so, otherwise click **Next**.



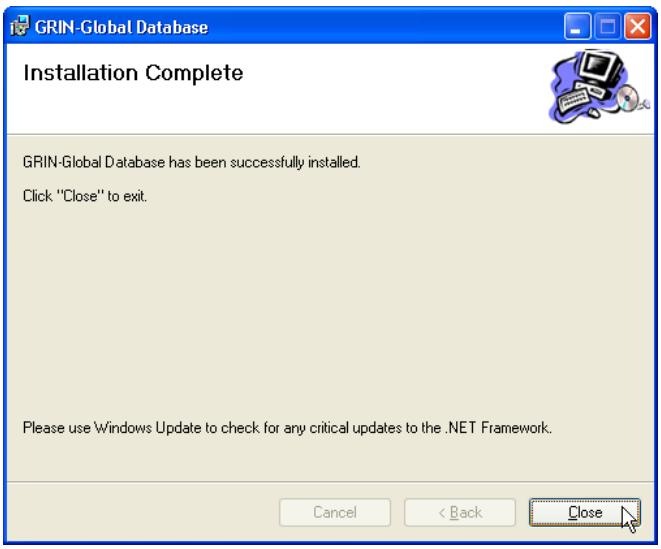
Click **Next**.



Several screens will display in succession.



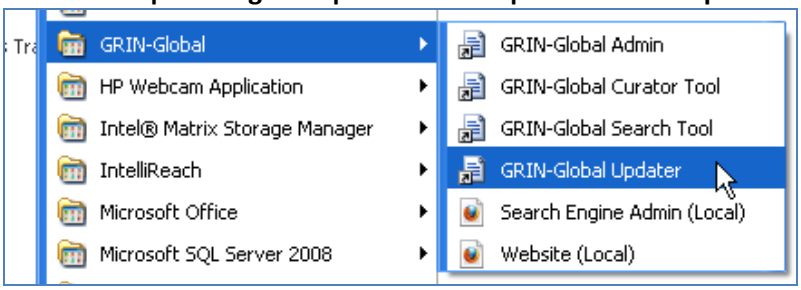
The final window will indicate that the database "has been successfully installed;" click **Close**.



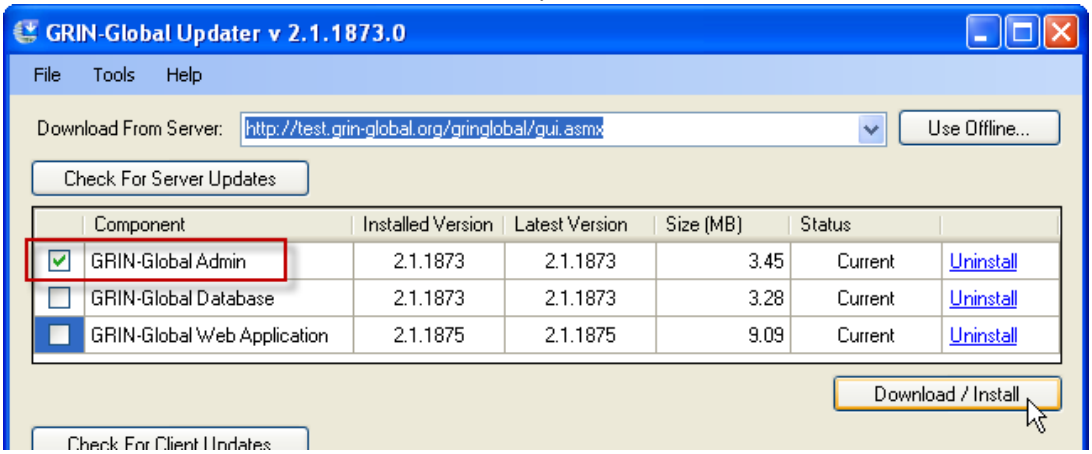
Admin & the Web Application: Installing (or Updating)

Installing either the Admin or the Web Application server components is very straightforward. Generally, all three server components will be selected at the same time, but each can be selected individually as shown below for the **Admin** component.

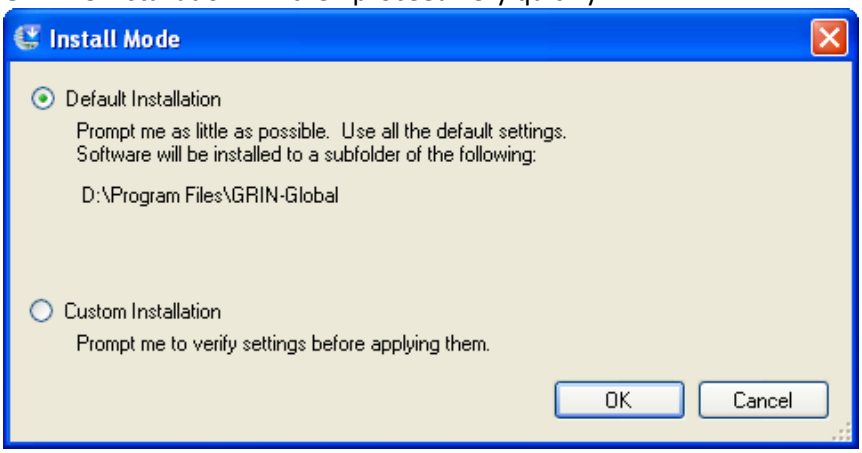
Select **Start | All Programs | GRIN-Global | GRIN-Global Updater**



First click the **Check for Server Updates** button. Use **http://test.grin-global.org/gringlobal/gui.asmx** for the address. Select the checkbox for the component to be installed:



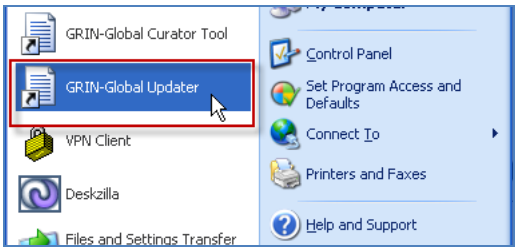
You will be prompted to select a **Default** or **Custom** installation; select the desired option and then click **OK**. The installation will then proceed very quickly.



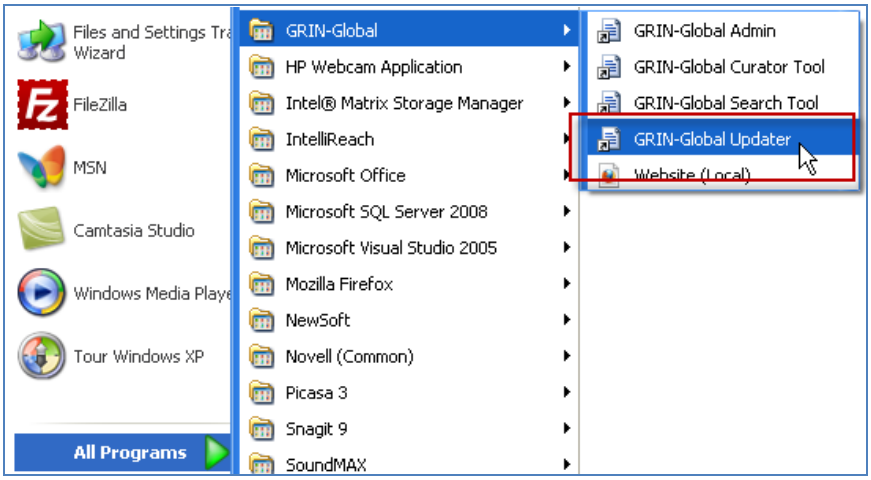
Curator Tool: Installing (or Updating)

GRIN-Global Client Program

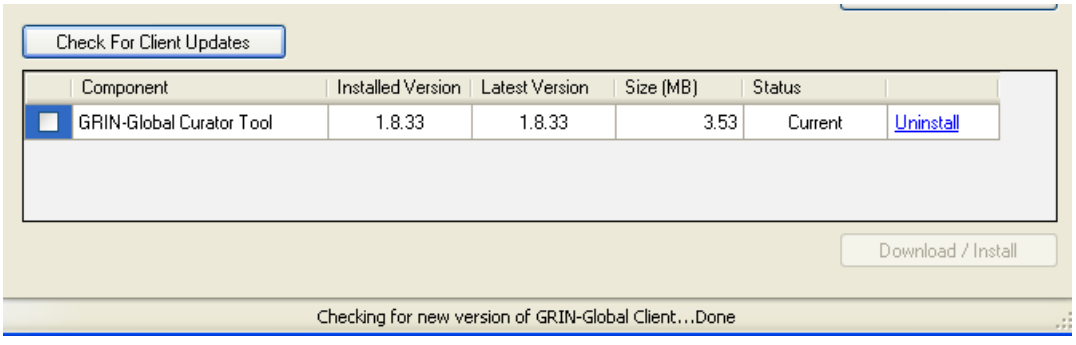
The Curator Tool is the GRIN-Global client application that is installed on the user's PC. Similar to installing the server components, use the GRIN-Global **Updater** program to install the **Curator Tool**. Click the Windows **Start** button. On the Start Menu's recent programs list, click on **GRIN-Global Updater**. If that selection is not displayed, click on **All Programs | GRIN-Global | GRIN-Global Updater** .



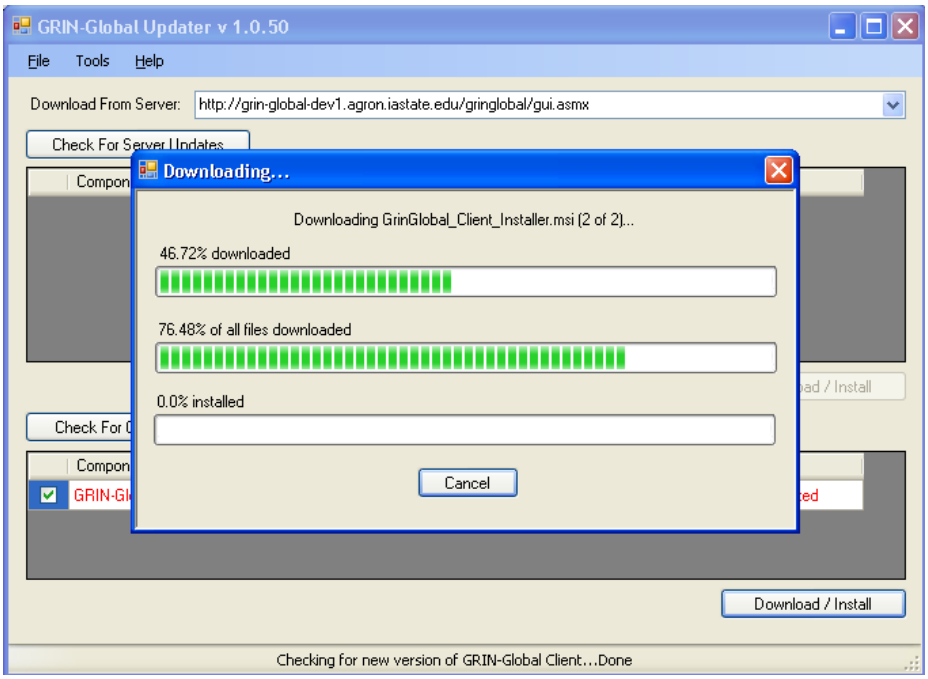
-or-



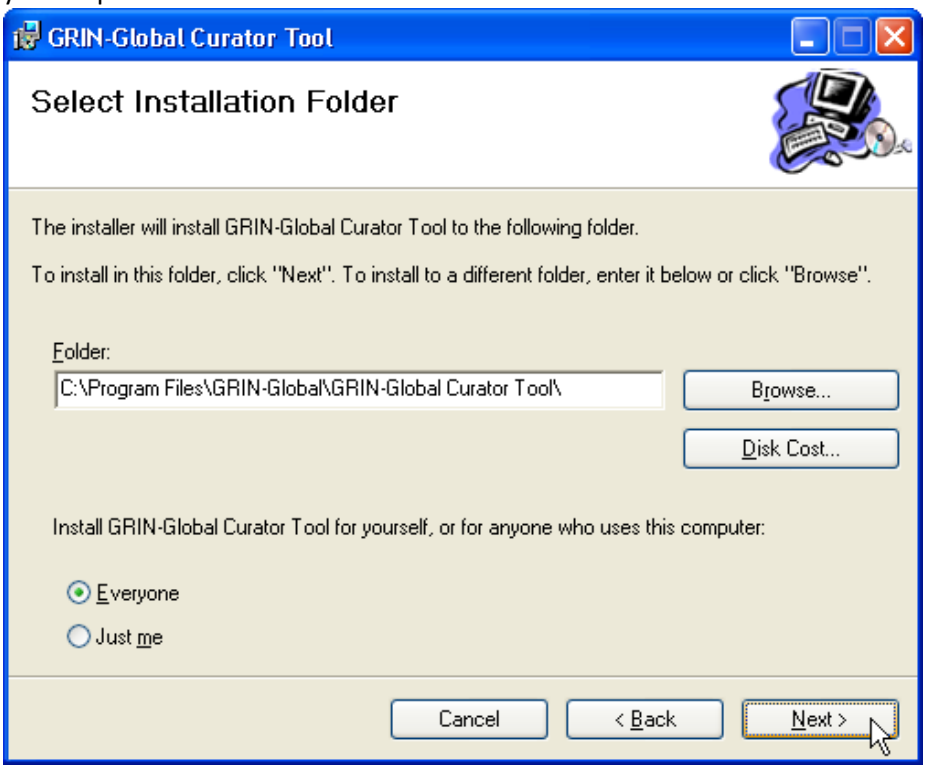
Click the **Check for Client Updates** button. If the GRIN-Global Curator Tool **Status** is "Outdated," click the **Download / Install** button. (In this example, the GRIN-Global Curator Tool component has a "Current" status; hence the **Download/Install** button is not active, since there is no need to download.)



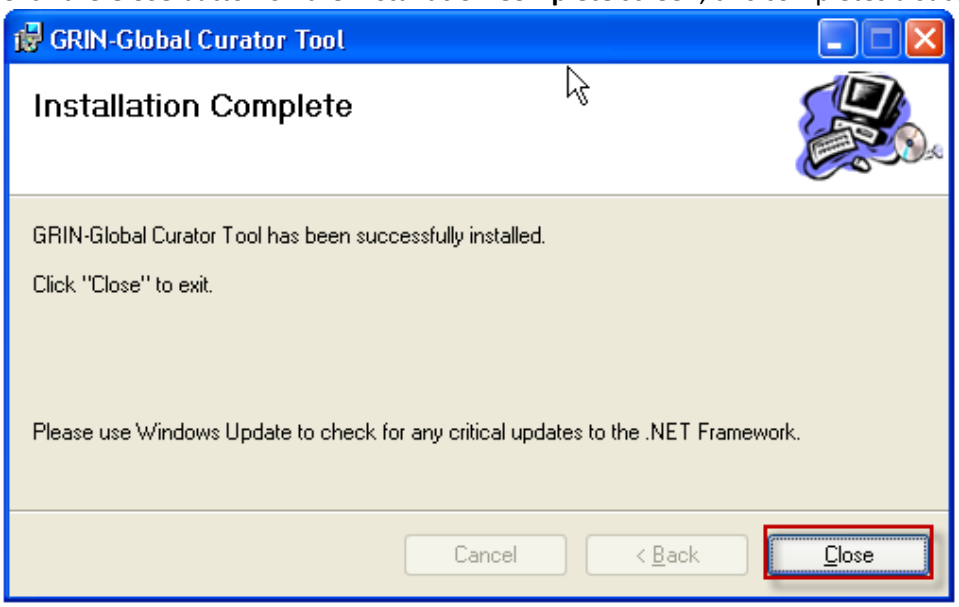
When the GRIN-Global Curator Tool component has an "Outdated" status, click the bottom **Download/Install** button; the **Client Installer** program will proceed to download.



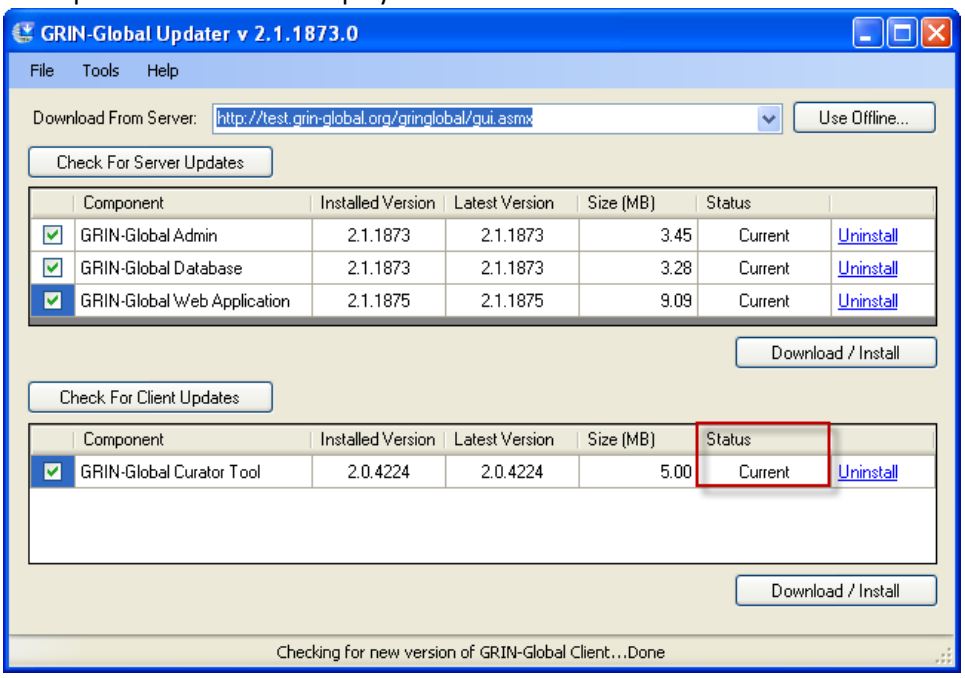
After the download completes, follow through with the installation wizard; you will be prompted by a series of screens to continue with the installation. On the **Select Installation Folder** screen, you can keep the default folder as listed or indicate a different location to store the Curator Tool. We recommend that you keep the folder information as it is listed.



Click the **Close** button on the **Installation Complete** screen; this completes a successful installation.



The Updater window will display the status for the Curator Tool as "Current."

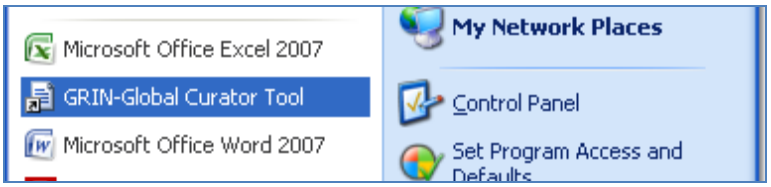


Starting the Curator Tool

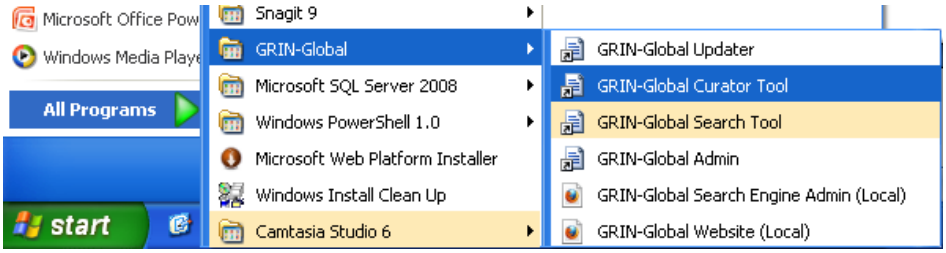
When the Curator Tool is initially invoked, it needs to be supplied with server information, indicating the database it will use. If the entire GRIN-Global application has been installed locally, then the database will be "**localhost**." In an organizational setup where the server is remote, you will point to the server's address. Directions for connecting the GRIN-Global servers to the Curator Tool are explained below.

Start the Curator Tool

After installing, select the **GRIN-Global Curator Tool** from the Windows program menu.



or…



You can also add the shortcut to the Start menu or the desktop. Select **Start | All Programs | GRIN-Global;** highlight the GRIN-Global Curator Tool program, then right-click. Select either **Pin to Start menu**, or **Create Shortcut** (desktop shortcut), or both.

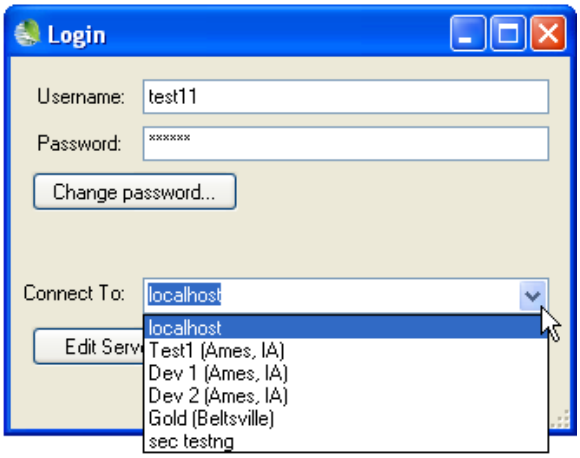
Connecting the Curator Tool to GRIN-Global Servers

Changing Servers

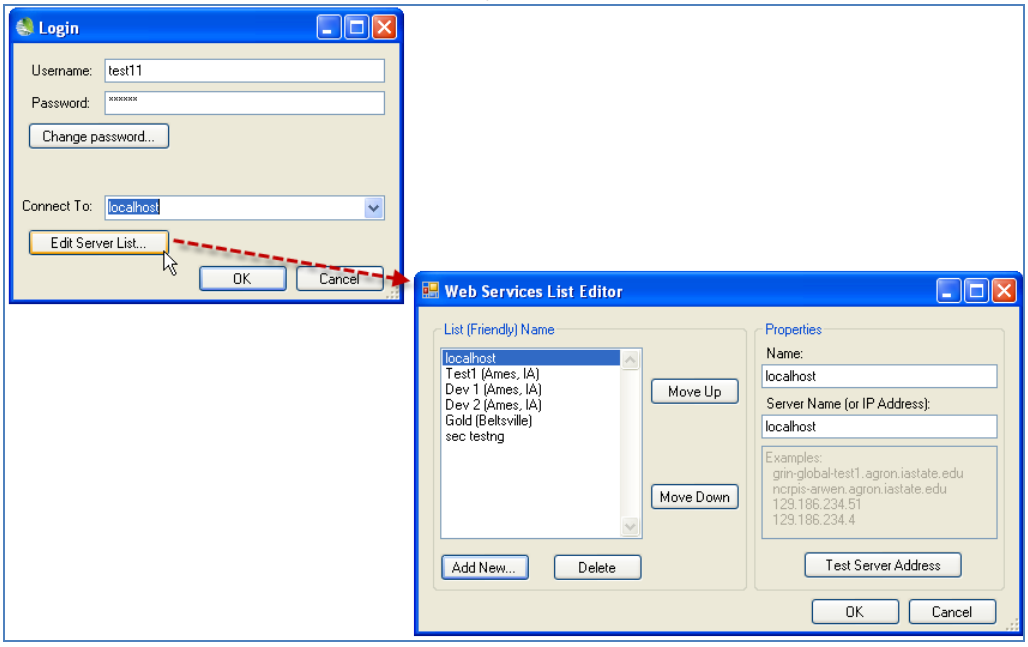
In most organizations the GRIN-Global database will reside on a remote server. In others, especially very small genebanks, the entire GRIN-Global suite of applications may be installed on a single user's PC. In either case, when you login you must indicate the GRIN-Global database location.

By default, a server will be listed in the **Connect To:** dropdown box. In the following example, the default server is localhost, which means that the user will be working on the database stored on his own PC. However, when the user clicks the dropdown, he sees several other possible servers which he can connect to. (Since this is a screen taken by a tester, there are many servers listed here whereas generally

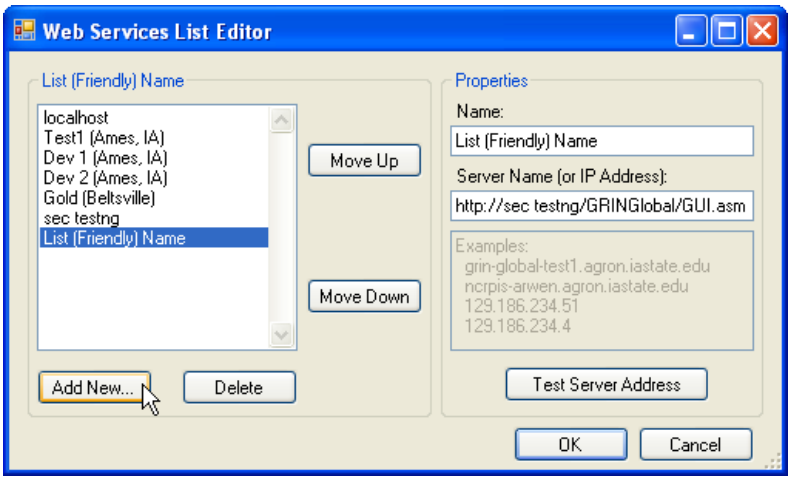
in most organizations only one or two will be listed.)



To include or delete servers from the list, click the **Edit Server List** button:



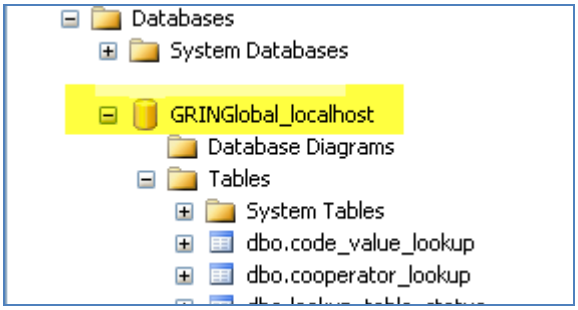
On the **Web Services List Editor** window, click the **Add New** button to add a new server. A new generic entry will be added at the bottom of the list in the left box, **List (Friendly) Name**. On the right side of the window, you can edit the name and the true server name or IP address. Typically the GRIN-Global administrator will provide the computer name of the server (or if she does not have a Domain Name Server available she will supply an explicit IP address).



Note that the order of the list can be adjusted by selecting a server and then clicking on the **Move Up** and **Move Down** buttons. When you work from multiple servers, move the server which you will use most of the time to the top at the list. The one listed at the top will be listed as the default server when the user logs in.

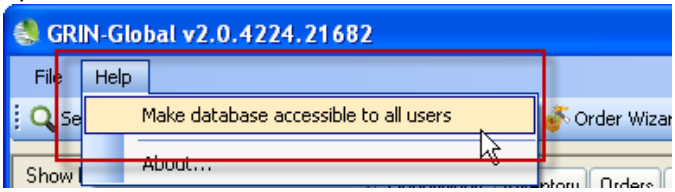
Handling Users Who Do Not Have Windows Administrator Privileges

When the Curator Tool is installed, a copy of SQL Server Express is also installed on the user's PC. (A database of lookup tables is installed, hence the requirement for SQL Server.)



Step for Adding the PC User(s) to the Local SQL Server Database Administrator's Group

In some organizations, the usual user ("owner") of the PC is not granted Windows administrator privileges. When that is the situation, a person with administrator rights on the PC needs to grant the primary user (and other users of the PC) the right to modify the local (LookUp table) SQL Server database when they are using the Curator Tool. This one-time step is done within the Curator Tool. The person with Windows Administrator rights needs to start up the CT and select from the **Help** menu the option **Make the database accessible to all users**:



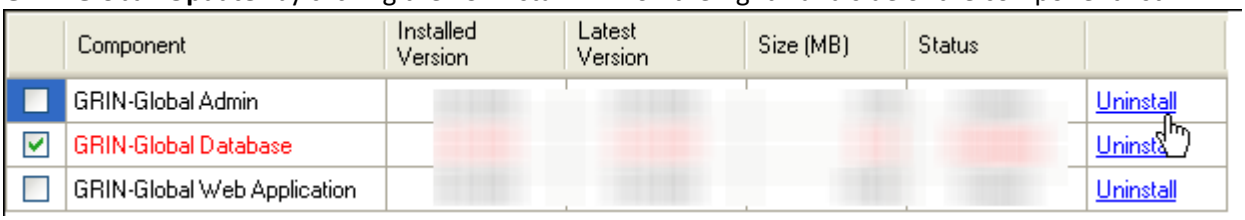
Organizational Setup

There are three major steps to be completed when setting up GRIN-Global for an organization:

1. Install the software (explained in this **GRIN-Global Installation Guide**)
2. Prepare and import any existing data (refer to the **GRIN-Global Cookbook** for an overview and step-by-step details**)**
3. Add users and grant them security privileges. (Described below are some general suggestions about adding users; for detailed steps, refer to the **GRIN-Global Administrator Guide** and the **Curator Tool User Guide** – each of these manuals addresses specific security settings, permission, and ownership.)

Uninstalling and Re-installing GRIN-Global

If you have a version of GRIN-Global server software installed that is older than 1.5.1167, we recommend that you manually un-install the server components running the newest version of the **GRIN-Global Updater** by clicking the "Uninstall" link on the right-hand side of the component list.



(The latest version of the Updater program is available on http://distribution.grin-global.org/gringlobal/downloads/default.aspx).

After you have manually un-installed the legacy server components, you are ready to install the latest version of GRIN-Global.

There should be no reason why you should uninstall SQL Server Management Studio (SSMS) (if you had previously installed it when installing an earlier version of GRIN-Global). Never manually use Windows Explorer to find and delete SSMS files or programs.

Adding Users

During the initial GRIN-Global installation, two user accounts are automatically generated: **administrator** and **guest**. The initial password for **administrator** is **administrator**.

Because **administrator** is the only default Admin Tool administrator, immediately after installing GRIN-Global, you should (a) change the administrator password, and (b) create at least one more administrator user account.

You should also add new user accounts before, or as soon as they are needed.

Security Issues

When security is enabled, permissions which have been established at the table or dataview level or even across the database will be in effect. Unless given specific permissions, new users will be very limited to what they are allowed to do.

If you prefer to globally disable all security restrictions, in the Admin Tool, select **Web Application**; double-click on **DisableSecurity**; select **True**. (See the **Security** section in the Admin Tool Guide for details.)

Alternatively, if you keep security enabled, then individual User IDs cannot create new records until you either add the users to the **Administrators** group or grant the users **All access** permission.

Use the Admin Tool to grant other users WRITE privileges to tables (please see the Administrator Guide for instructions on how to grant users security privileges).

Windows Administrator Rights

For security reasons in some organizations, a user's PC may be setup so that the user does not have full Windows Administrator rights to his / her PC even though that user may be the primary (or only) user of the PC. When that is the case, the organization's PC Administrator, usually someone from the organization's Information Technology or Security group, will need to install GRIN-Global. The administrator will also need to perform an additional step if the GRIN-Global user will be accessing data on her local PC. For complete directions on adding the user to the local SQL Server database administrator's group, see "Handling Users Who Do Not Have Windows Administrator Privileges" on page 38.

Installing with Firewalls

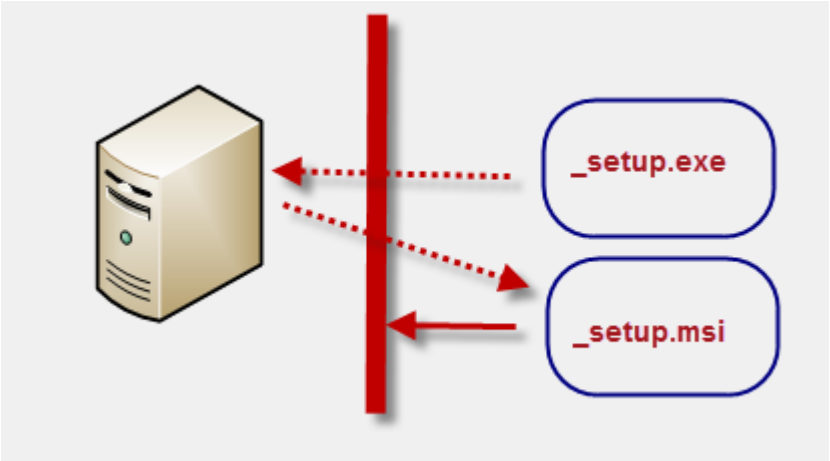
Two Setup Files are Involved in Setting Up the GRIN-Global *Updater* Application

"...setup.exe"
This is the file that is accessed from the link under the *Installers* section of the GRIN-Global downloads page:
http://distribution.grin-global.org/gringlobal/downloads/default.aspx

This **setup** program will automatically check your system to ensure all system components and applications required by the GRIN-Global **Updater** program are properly installed on your computer. If any prerequisite is not detected by this **setup** program, it assists with the downloading and installing of the missing component before allowing the **Updater** program to be installed.

"...setup.msi"
After **setup** is satisfied that all **Updater** prerequisites have been successfully installed on your computer, it downloads and runs a second file (the **GrinGlobal_Updater_Setup.*msi***) to complete the Updater installation process. You will know the **GrinGlobal_Updater_Setup.msi** file has successfully downloaded and started properly when you see the "Updater Setup Wizard" steps on your screen.

Unfortunately, some organizations have a firewall that prevents the second of the two GRIN-Global installation files from properly downloading:



(The actual file names are **GrinGlobal_Updater_Setup.exe** and **GrinGlobal_Updater_Setup.msi**.)

How can you know if the .msi is not able to get through the firewall? During the installation process, after you have started the **Grin-Global_Updater_Setup.exe** file, you should be prompted to run the .msi file – if you receive an error message similar to the following, then the firewall is preventing the .msi file from running:

When this situation exists, and if you have previously installed GRIN-Global, you may run into the situation where *it appears that everything is okay, when in fact an old version of the msi file will run on your PC, and will not run the correct version* of the GRIN-Global **Updater** program.

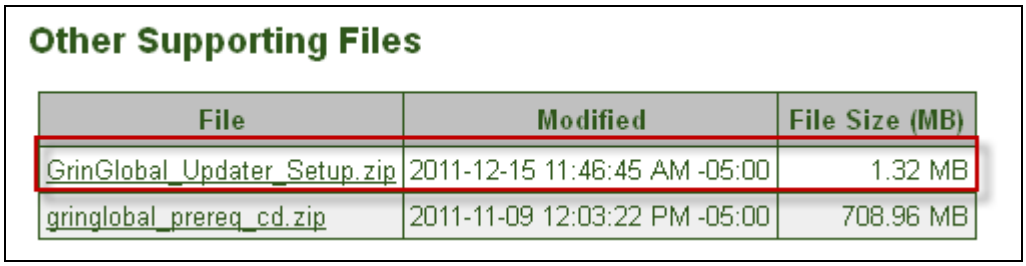
If your organization has a firewall that prevents you from downloading the msi file, an alternative is to download the compressed file **GrinGlobal_Updater_Setup.zip** that contains both the **.exe** and the **.msi** files.

Directions for installing GRIN-Global Updater when your organization has a firewall are detailed, starting on the next page.

When a Firewall is Active

If your organization has a firewall:

1. Download the "zip" file **GrinGlobal_Updater_Setup.zip** from the GRIN-Global downloads page: (http://distribution.grin-global.org/gringlobal/downloads/default.aspx)



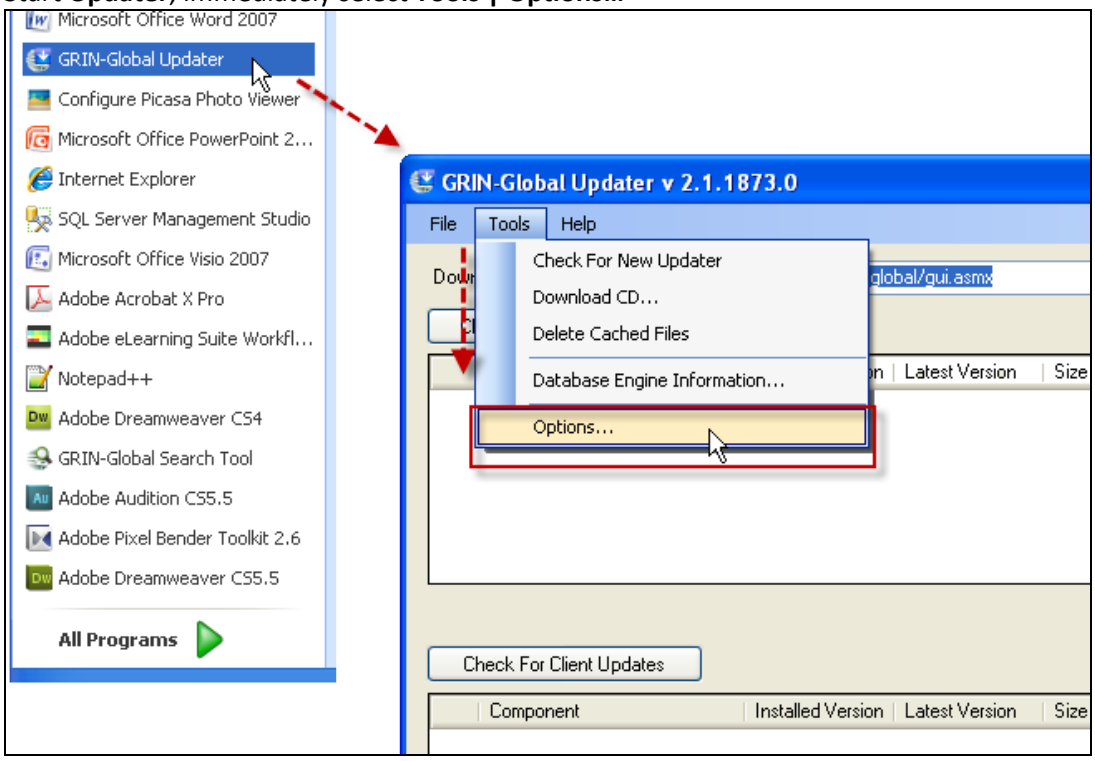
2. The two setup files, the .exe and the .msi files are contained in the zip file. (**GrinGlobal_Updater_Setup.exe** and **GrinGlobal_Updater_Setup.msi**)

   Unzip (extract) the two files into one folder on your computer's hard drive.

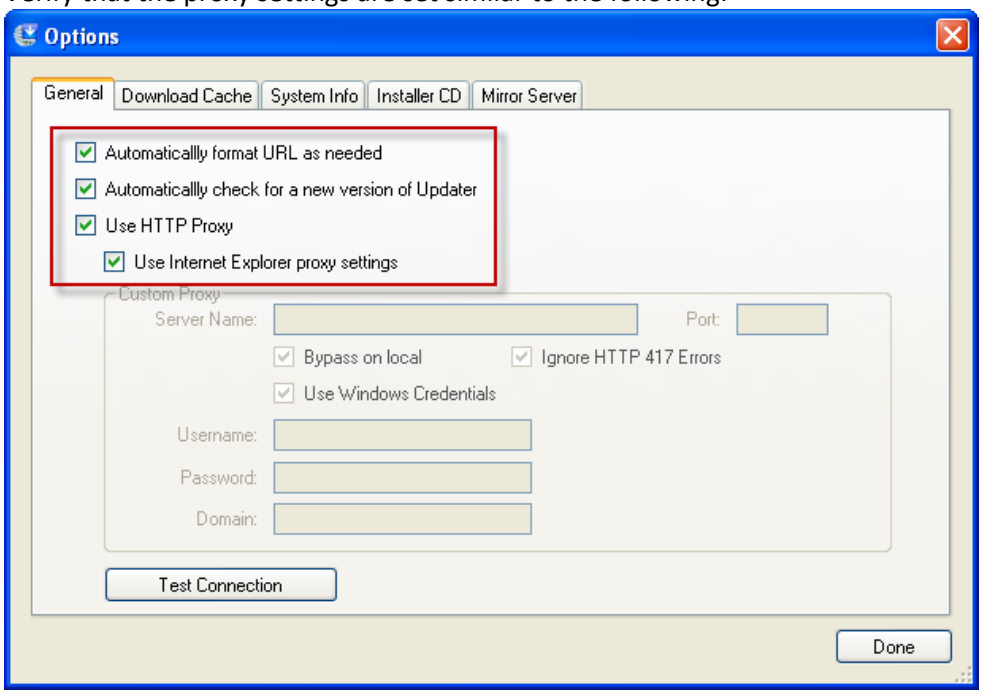
3. Run Grin**Global_Updater_Setup.exe**

4. After the Updater application has been successfully installed on your computer, **do not attempt to download or install any GRIN-Global applications (including any updates to the Updater application itself) until you have properly configured the HTTP Proxy settings in the Updater application**.

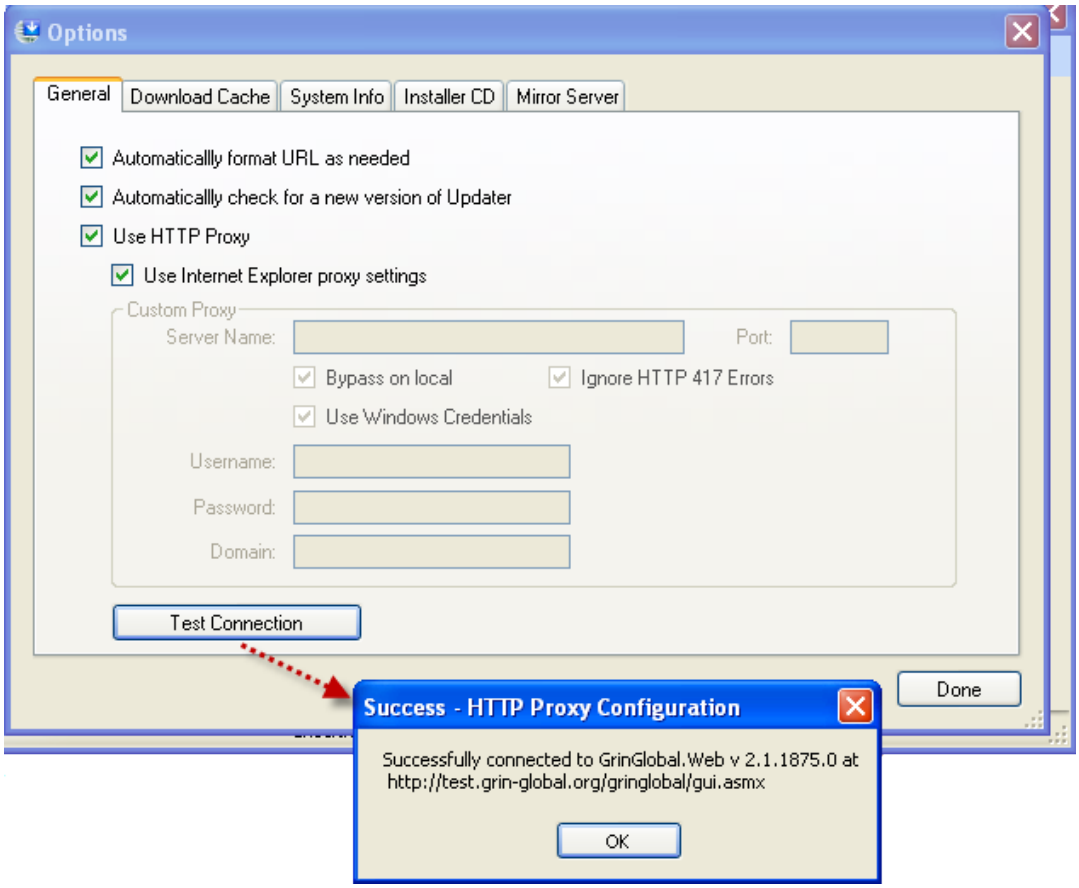
   Start **Updater**; immediately select **Tools | Options…**



5. Verify that the proxy settings are set similar to the following:



6. Test the connection:



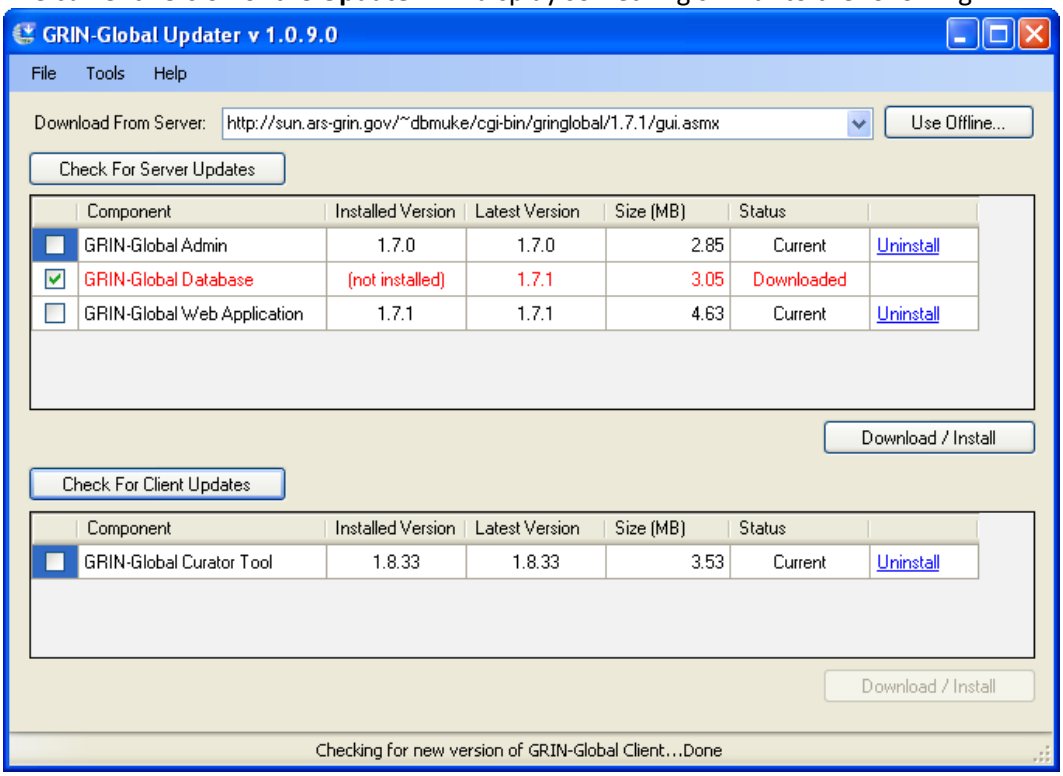
The following screen example does not reference the currently recommended versions or server address.

As of November 1, 2013, please use:

http://sun.ars-grin.gov/~dbmuke/cgi-bin/gringlobal/1.7.1/gui.asmx

for the server address

The current version of the **Updater** will display something similar to the following:



The items outlined by the red boxes are critical – you must be pointing to the correct server in order to download the GRIN-Global components: **Admin**, **Database**, **Web Application**, and the **Curator Tool**.

Verify that the Latest Version is higher than the Installed Version.

If you are still having difficulties with the installation after having followed the steps above, check with your local systems administrator or contact feedback@ars-grin.gov.

Installing GRIN-Global on a Non-Windows Server

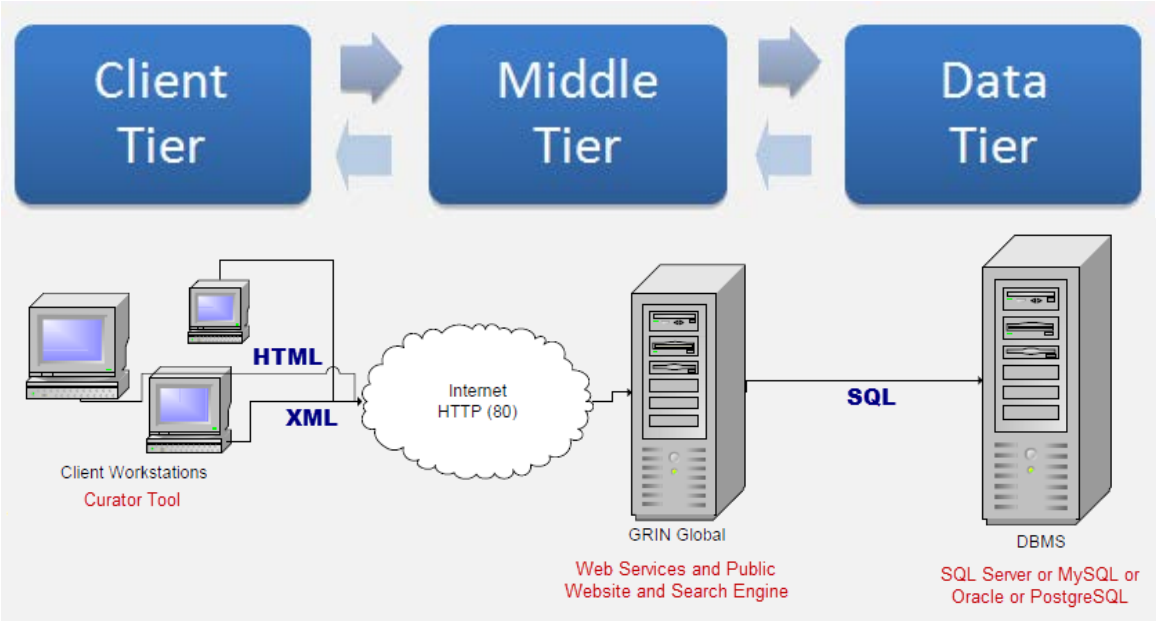
Background Information

GRIN-Global was designed to primarily run in a Windows environment, but it is possible to have a non-Windows server house a MySQL, PostgreSQL, or Oracle database. However, to do so, you will need to first install GG on a Windows-based PC, and then port the database from the Windows-based PC over to the non-Windows server by backing up the Windows database and restoring it to the non-Windows server.

After porting the database to the non-Windows server, you will then point to the database in its new location with a parameter in the GRIN-Global Admin tool. Follow the detailed steps in this section for this type of installation.

The GRIN-Global (GG) system is a 3-tier based system. The three tiers are the: **client**, **middle**, and **data** tiers.

- The **data tier** is the database where the plant genetic resource data is permanently stored – GRIN-Global is designed to handle four database engines: SQL Server, MySQL, Oracle, PostgreSQL. Organizations can implement any one of these as their database engine.
- The **middle tier** consists of three sub-components: the GG Public Website, the Search Engine, and Web Services. (Web Services sends and receives data used by any Client Tier application.)
- The **middle tier** runs under the IIS web server on a Windows computer.
- The GG **client tier** application – the Curator Tool – never talks to the data tier directly, but instead communicates only with the **middle tier's** Web Services, using HTML and XML through port 80 on the IIS server. (By using port 80, the CT is very firewall friendly.)
- Since the **middle tier** manages the data between the **data tier** and the **client tier** (the Curator Tool), the CT never needs a database connector to the GG database because it never connects directly to that database; instead the CT requests data from the **middle tier** which in turn uses its database connector to retrieve the data from the remote database (**data tier**)



Install GG on a Windows-based Computer

The ideal environment for installing GG is a Windows-based computer that has not yet had any applications installed on it, especially database applications. Having a "clean" system avoids any possible conflicts that may occur when there are two or more database engines installed on the same PC. For example, if a PC has SQL Server 2005 running on it, during the GG installation, GG will load a 2008 version of SQL Server. Sometimes having more than one database engine installed on the same box, such as SLQ Server and MySQL, can also complicate installation of GG.

1. Install either Windows XP Pro SP3 or Windows 7 Pro/Ultimate. (GRIN-Global is not compatible with Windows XP Home Edition. It is compatible with Windows 7 Home Premium.)
2. Install a version of your preferred database engine on the Windows computer. For example, if you intend to run Oracle, MySQL, or PostgreSQL on the remote server, install the Windows version on your Windows box now. NOTE: MySQL installations should use the MySQL Windows Essentials 5.1 installer and ensure that the InnoDB storage engine is set as the default.
3. Navigate your browser to the GRIN-Global test download website: use: http://sun.ars-grin.gov/~dbmuke/cgi-bin/gringlobal/1.7.1/

   Download and install the GG **Updater** application by following the instructions in the GRIN-Global Installation Guide. (The Updater installation steps begin on page 9, but the first eight pages include background material you should review before installing.)
4. Refer to the section *Server Components: Installing (or Updating)* section in the Installation Guide and follow the steps for installing the three GG server components on a Windows-based computer. Create the GG server using a localhost database connection – it should automatically detect your preferred database installed in step 2 above and install the GG database to it.

You do not need to install the Curator Tool on the server to get your GG server up and running.

The Curator Tool is an application designed to be used on the curator's desktop PC and does not typically run on the server, but if you prefer, you can also install it on the server.

Note that whenever you install the Curator Tool on a PC, a version of SQL Server Express will also be installed. The Curator Tool uses this database engine only for its lookup tables. There should not be any clash with the main database engine by installing SQL Server Express.

Load Your Local Data to the New MySQL GRIN-Global Database

1. Start the GG Administrator Tool. You will use the Import Wizard in the Administrator Tool to complete these next steps.
2. Follow the instructions in the Import Wizard Cookbook for preparing your local data for importing to GG using the Import Wizard.

For examples of sample data, refer to the spreadsheets at http://www.grin-global.org/index.php/Training There is a zip file listed under the *Training Exercises* section, in the table's fourth row, that contains all of the sample .csv files.

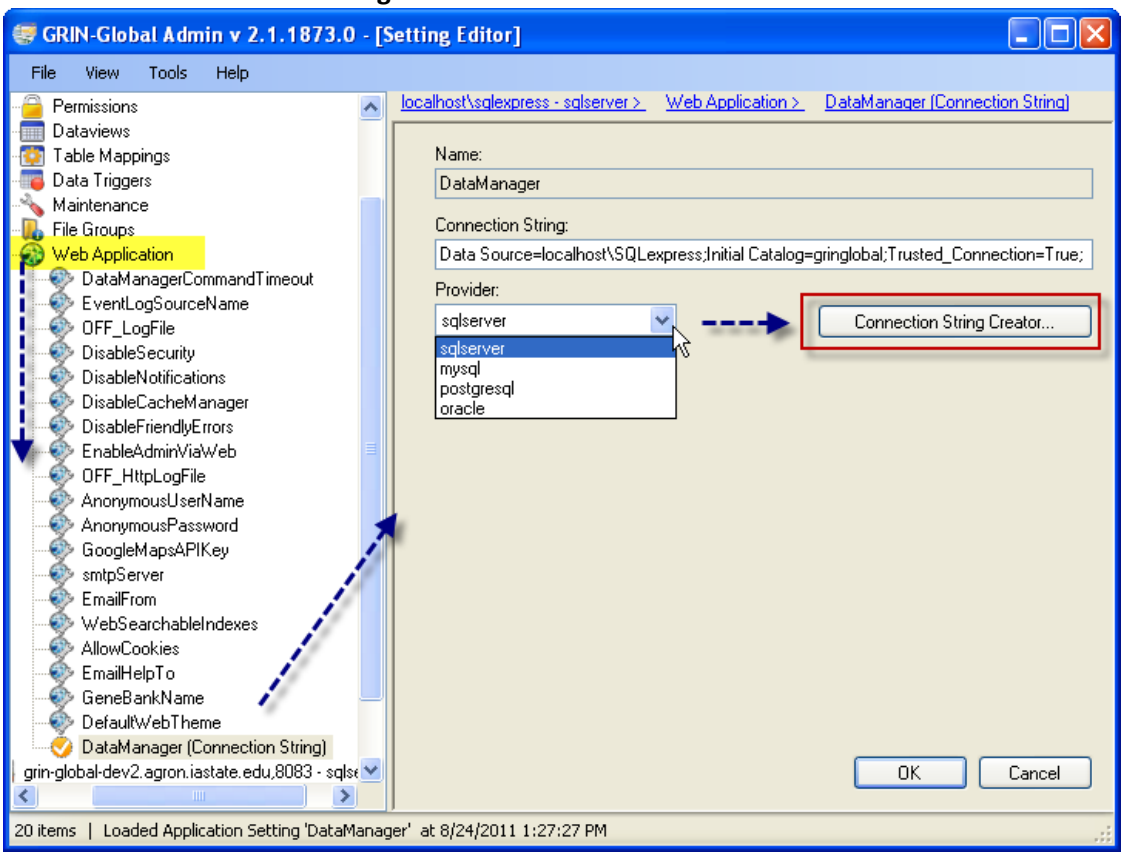
Load the Data into Your Remote MySQL Database Server

1. Backup the MySQL GRIN-Global database from your localhost Windows server.
2. Copy the backup file over to your remote MySQL database and restore it there.

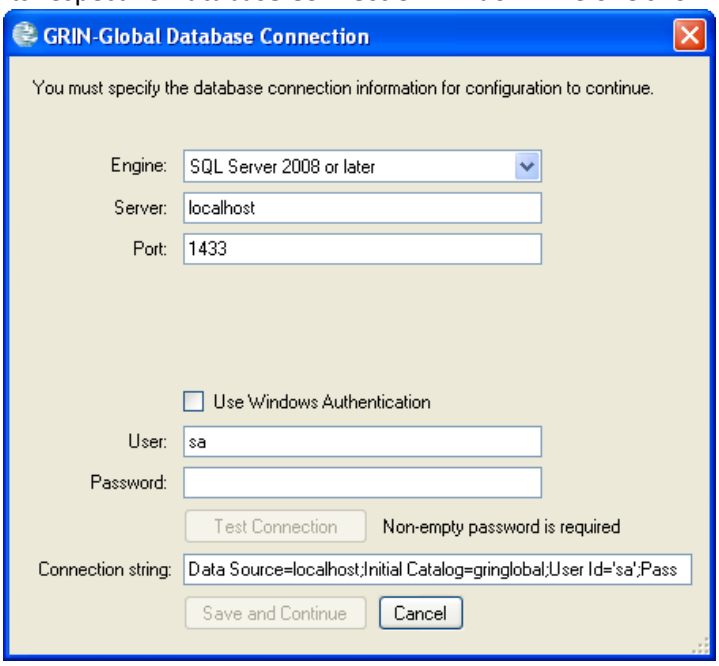
Modify the Database Connection Used by the Middle Tier Web Services

In this step, you will use the GG Admin Tool to point to your new remote database.

1. Start the Admin Tool.
2. Click on the **Web Application** branch; select **DataManager (Connection String)**.
3. Modify the **Connection String** box to point to your remote server. To do so, click the **Provider** dropdown box; select the database type that matches the target remote database engine type. Then click the **Connection String Creator…** button.



Complete the fields on the **Database Connection** window to generate the correct **Connection String** text. Click the **Save and Continue** button when complete. (Each database engine type has its respective **Database Connection** window. The one shown here pertains to SQL Server.)



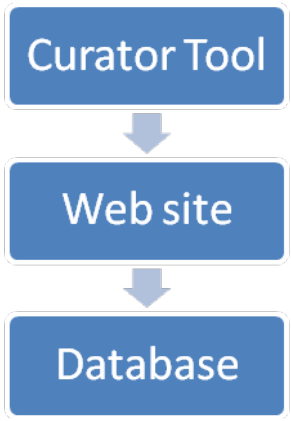
5. To test your remote database, reboot the Windows server that hosts the GG Web Services and Public Website. After the server reboots completely, on your client PC open a browser and connect to the localhost GG Public Website using (http://localhost/gringlobal/search.aspx). If the Public Website comes up without errors, you can be assured that the new remote database is working and connected properly because the following conditions are true:

    A. Windows IIS web server is running and accepting HTTP requests from the client

    B. the remote GG database is accepting remote database queries
    (the local GG Public Website in the middle tier depends on the GG database connection being valid and available)

How to Troubleshoot Connection Problems

GRIN-Global is essentially a three-tier system: outermost being the Curator Tool, then the web site, and finally the database. Troubleshooting connection issues can be tricky because each layer must be able to talk successfully to the next deeper one.



The following is an outline of the approach to determine where connection problems are happening. Generally, localhost is assumed most of the time when you're debugging connection issues, it's immediately after install.

1. Ensure you are running the latest version of all components (server and client).

2. Open a browser to the downloads page: http://localhost/gringlobal/downloads/.
   The downloads page does *not* use any dataviews at all -- the only reason it even touches the database is for pulling language information. If you are able to load the downloads page successfully, that means the web site can talk to the database. If not, see *Inspecting Logins* section below.

3. Navigate to the Taxonomy page (which *does* use dataviews):
   http://localhost/gringlobal/taxonomybrowse.aspx.
   On this page, click the **Go** button without filling out anything on the form. If you can load this page successfully, it means basic dataview processing works properly. If not, it may mean either your particular dataview is not configured properly or a data trigger is not configured properly. See the sections *Inspecting Dataviews* and *Inspecting Data Triggers*, respectively.

4. Next, open the Curator Tool, and login with **administrator** for the user name and password. If you get a login failed, you may be using an outdated version of the CT or the web site -- try **admin1** instead (for both user name and password). If not, see *Inspecting Logins.*

Inspecting Logins

The Admin Tool allows you to connect directly to the database, sidestepping any issues that may exist in the web site configuration. To use the Admin Tool, you need two logins:

- A *database engine* login. This is the login credentials required by the database engine to allow you to connect to read or write data in any database hosted by the database engine. This varies by database engine, and is configured separately from GRIN-Global. SQL Server allows you to

login using Windows Authentication, meaning you don't have to provide a user name and password.

- A *GRIN-Global* login. This login controls access to read or write data specifically to the GRIN-Global database. Also, this login must belong to the **ADMINS** security group defined within GRIN-Global. By default, the **administrator** user is a member of this group.

After you are able to connect the Admin Tool to the proper database, click on the **Users** node. Here, all existing GRIN-Global users will be displayed. You can also manually set the user passwords. Add / edit users as needed here.

Next, click on the **Web Application** node. Two settings are used by the web site: **AnonymousUserName?** and **AnonymousPassword?**. This is the user name / password the web site uses to login to GRIN-Global with when a web visitor is not logged in with a specific login. If these are not configured properly to match a given user/password displayed in the **Users** node, the web site will fail to load properly.

Visitors can create new logins via the web site's **Register** functionality. To keep web-based user logins separate from actual GRIN-Global logins, an entirely separate user table exists. This means registering a user via the web site does NOT create a valid login that can be used via the CT.

Users that need access to the CT need to be created as follows:

- Using Admin Tool, create a new user under the **Users** node. Set an initial password.
- Add that new user to the **CTUSERS** group (the Curator Tool Users group)

If the user is not added to the **CTUSERS** group, when they try to run the CT it will complain with errors similar to "…cannot write to app_user_item_list table," or some other security permissions error. Simply add them to the **CTUSERS** group; then restart the CT.

Inspecting Dataviews

When a dataview does not load, it may be due to one of the following reasons:

- The dataview itself doesn't contain valid SQL.
- Parameters passed to the dataview may be invalid
- Parameters may be defined as the wrong data type
- Flag(s) at the field definition level may be wrong

The easiest way to test these is to launch the Admin Tool:

- Connect to the proper database
- Go to the **Dataviews** node
- Click the dataview in the list (the error webpage should show you the name of the offending dataview)
- After the dataview loads, click on the Preview tab (near the bottom)
- Enter same parameters as when the error occurred (again, from the error webpage)
- You should get a descriptive error message on failure.

If you get an error such as “primary key cannot be null” or “duplicate data exists,” it means the Primary Key flag for one or more fields in your dataview is not set properly.

If you get an error that seems to be emitted from the database engine (it will vary for each engine), edit the SQL and try again.

There are several reasons why dataviews may not be working properly, so this is not an exhaustive list.

Inspecting Data Triggers

If dataviews are not loading properly, it may be caused by an improperly configured data trigger. If you get errors similar to “… is not a valid type…” or “…could not find file xyz.dll…,”then it may be that the data trigger .dll file is referenced by the database, but cannot be located in the file system (typically at c:\inetpub\wwwroot\gringlobal\bin\). If this is the case, the easiest correction is to do one of the following:

1. Find the file, copy it to the appropriate folder, restart the web server
2. Remove the database references to the file

To do the second approach, run the Admin Tool and do the following:

- Connect to the proper database
- Click the **Data Triggers** node
- Find any items that match the file or class name described by the error
- Delete those items
- Restart the web server

Do not worry about deleting the items -- when you do locate the appropriate file, you can import it using the Admin Tool (under the **Data Triggers** node, right-click, select **Import**). Data trigger files are designed to be self-configuring, meaning they should contain the proper information to create the appropriate items in the database as needed.